EFFECTIVENESS OF MOLIDRAIN BAG VS BOTTLE DRAIN UPON NURSING COMPETENCY OF NASOGASTRIC ASPIRATION AMONG POST ABDOMINAL SURGERY PATIENTS

BY

CHANDRA.K

A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTERS OF SCIENCE IN NURSING

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DECLARATION

I hereby declare that the present dissertation entitled **"Effectiveness of Molidrain Bag Vs Bottle Drain upon Nursing Competency of Naso-gastric Aspiration among Post Abdominal Surgery Patients at Selected Hospital in Chennai"** is the outcome of the original research work undertaken and carried out by me under the guidance of **Dr. LathaVenkatesan**, M.Sc(N)., M.Phil(N)., Ph.D(N)., MBA., Ph.D .(HDFS)., Principal ,Apollo College of Nursing and **Mrs.D.Sasikala**, M.Sc(N)., Reader, Apollo College of Nursing,Chennai.I also declare that the material of this has not found in any way, the basis for the award of any degree or diploma in this university or any other university.

CHANDRA.K

M.SC (N) II YEAR

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SYNOPSIS

Statement of the Problem

An Experimental Study to Assess the Effectiveness of Molidrain Bag Vs Bottle Drain upon Nursing Competency of Naso-gastric Aspiration among Post Abdominal Surgery Patients at Selected Hospital in Chennai

The Objectives of the Study

The objectives of the study were

1. To assess the level of nursing competency of nasogastric aspiration among post abdominal surgery patients with molidrain bag and bottle drain.
2. To determine the effectiveness of molidrain bag vs bottle drain for naso gastric aspiration by comparing the nursing competency scores of nasogastric aspiration among post abdominal surgery patients.
3. To assess the level of acceptability of nursing competency of nasogastric aspiration among post abdominal surgery patients with molidrain bag and bottle drain
4. To determine the association between the level of nursing competency of naso-gastric aspiration and the selected demographic variables of post abdominal surgery patients in molidrain bag group and bottle drain group.
5. To determine the association between the level of nursing competency of naso-gastric aspiration and the selected clinical variables variables of post abdominal surgery patients in molidrain bag group and bottle drain group.

The conceptual framework for this study is based on Modified Ottawa Model of Research (Logan & Graham, 1998).

A true experimental post test only study design was used. The study included 60 patients selected by probability systematic random sampling technique. The present study was conducted in Apollo speciality hospital, Teynampet, Chennai. The dependent variables of the study were the molidrain bag and bottle drain and the independent variable was nursing competency for naso-gastric aspiration among post abdominal surgery patients.

An extensive review of literature and guidance by experts laid foundation to the development of demographic variable and clinical variable proforma of post abdominal surgery patients and the structured observation checklist to assess the nursing competency, structured rating scale to assess the level of acceptability regarding molidrain and bottle drain for nasogastric aspiration. The data collection tools were validated and reliability was established. After two weeks of pilot study, then data collection for main study was conducted. After obtaining ethical committee clearance and setting permission 60 samples were selected by systematic random technique i.e. 30 in molidrain and 30 in bottle drain group. All the odd numbered samples were included in the molidrain group and even numbered samples were included in the bottle drain group. A molidrain was designed by the investigator and the design was approved by the experts.

After obtaining individual participant consent the data regarding demographic variables and clinical variables of the post abdominal surgery patients were collected. Then the level of nursing competency on using molidrain bag and bottle drain for nasogastric aspiration was assessed by structured observation checklist. The level of acceptability regarding molidrain bag and bottle drain was assessed using structured

rating scale. The data obtained was analysed using descriptive and inferential statistics.

The Major findings of the study were

- Half of the post abdominal surgery patients in molidrain group and majority of the post abdominal surgery patients in bottle drain group were belonging to the age group of >50 years (50% and 83.3%) respectively. Majority of them in molidrain group were females (63.3%), while most of them in bottle drain were males (83.3%), more than half of them in molidrain group were from joint family (53.3%) but all of them in bottle drain group were belonging to nuclear family (100), most of them in molidrain group and more than half of them in bottle drain group were non smokers (90% and 56.7%), most of them in molidrain group and majority of them in bottle drain group were non alcoholics (96.7% and 73.3%) less than half of them in molidrain group were self employed (46.7%), while most of them were working in government sector in bottle drain group (96.7), majority of them in molidrain group were from urban area (76.7%) and most of them in bottle drain group were residing in semi urban area (90%) respectively.

- Most of the post abdominal surgery patients had BMI of 18.5 – 25 in both molidrain group and bottle drain group (93.3%). Majority of patients in molidrain group had no history of hypertension (70%) and all of the post abdominal surgery patients in bottle drain group had co- morbidity of hypertension (100%), most of the patients in the molidrain group had no history of diabêtes mellitus (76.3%) but, majority of the patients in bottle drain group had history of diabetes mellitus (90%), none of them had renal disorders

in both the groups, most of them in moildrain group and majority of them in bottle drain group had cancer (96.7% and 60%) respectively. Majority of them were maintained with head end elevation of $\leq 30^{\circ}$(60%) in both the groups, and majority of them had history of previous surgery (96.7% and 93.3%) in both the groups. More than half of them in moildrain group and all of the post abdominal surgery patients in bottle drain group were ambulated within 3rd post operative day (56.7% and 100%) respectively

- Most of the nurses demonstrated non competency with bottle drain for nasogastric aspiration (70%) among post abdominal surgery patients where as all the nurses demonstrated high competency with the molidrain bag for the nasogastric aspiration among post abdominal surgery patients (100%).

- There was a statistically significant difference in nursing competency between the molidrain group (M=41.86, SD=4.33) and bottle drain group (M=10, SD=1.38) with t value of 37.05 at $P < 0.001$. There was a significant difference in scores regarding safe handling (t = 43.208), prevention of complocation (t = 33.970), prevention of infection (t = 31.100), time and cost control (t = 18.34) between molidrain bag group and bottle drain group, which is significant at p<0.000 level. Thus the null hypothesis **$H_0$1** stating that "There will be no significant difference in nursing competency of nasogastric aspiration among post abdominal surgery patients between the molidrain bag group and bottle drain group" was rejected**.**

- All of them had high acceptability towards molidrain bag for nasogastric aspiration (100%) while majority of the nurses had unacceptability towards

bottle drain (70%). Hence the null hypotheses stating that **Ho4** "There will be no significant difference in level of acceptance of nurses regarding between molidrain bag and bottle drain for naso-gastric aspiration among post abdominal surgery patients" was rejected.

- There was no significant association between the level of nursing competency of nasogastric aspiration and the demographic variables such as age, gender, habit of smoking, alcoholism, residential area, type of family, occupation of post abdominal surgery patients in molidrain group and bottle drain group. Hence the null hypothesis H_O2 stating that "There will be no significant association between the level of nursing competency of nasogastric aspiration and the demographic variables of post abdominal surgery patients in molidrain group and bottle drain group" was retained.

- There was no significant association between the level of nursing competency of nasogastric aspiration and the selected clinical variables such as body mass index, history of hypertension, diabetes mellitus, COPD, renal disorder, cancer, previous surgery, starting day of the ambulation and head end elevation of the post abdominal surgeries in molidrain bag group and bottle drain group. Hence the null hypothesis **H_O3** stating that "There will be no significant association between the level of nursing competency of nasogastric aspiration and the clinical variables of post abdominal surgery patients in molidrain group and bottle drain group" was retained.

Recommendations

- Present study can be replicated in other hospitals also.
- The student nurses can be trained effectively in handling of the molidrain bag and educate the standards of practice.
- The product can be recommended to other multispecialty hospital and improve the quality of health care services.
- The cost effectiveness of the process can be studied by conducting research with large sample size in future.
- A multi center study may be carried out by applying the same interventions.
- Phenomenology study can be done to find out the barriers for adherence to practice safe method for nasogastric aspirations and find out the factors to overcome the barriers to implement the practice

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CHAPTER I

INTRODUCTION

Background of the Study

Nasogastric tubes (NGTs) have been around for a long time, with the first account of their insertion being in the seventeenth century. Their first use was solely for providing nutrition (Phillips, 2006). Currently, NGTs are also used for other indications such as the administration of medications, gastric decompression, or gastric irrigation. The postoperative patients require the nasogastric tube for gastric decompression. Nasogastric decompression improves patient comfort, minimizes or prevents recurrent vomiting, and serves as a means to monitor the progress or resolution of postoperative ileus and overview of management of mechanical small bowel obstruction in adults.

Nasogastric aspiration is the process of draining the stomach contents. This action is normally performed for post operative patient for gastric decompression. The placement of the ryles' tube augments certain problems due to dilatation of the esophageal sphincter. Most of the patients end up with aspiration pneumonia in the absence of gag reflex. The intraluminal presence of an NG tube may interfere with the lower oesophageal sphincter and cause reflux of stomach contents, leading to aspiration pneumonitis. The risk is increased when patients are fed when lying down flat. The tube may enter the lungs because of the proximity of the larynx to the oesophagus, the nasogastric tube may enter the larynx and trachea (Lo et al, 2008). This may cause a pneumothorax (Zausig et al, 2008).When the tube is in the airway, it will cause severe irritation and cough. The tube may coil up in the patient's throat. The presence of an NG tube in the nose for an extended period may lead to

damage to the ciliary epithelium and cause infection, which may lead to sinusitis. The tube can enter the brain (Geissler, 2007). Perforation of the oesophagus (Hutchinson et al, 2008) may occur in pre-existing oesophageal disease. Retropharyngeal abscess may occur from perforation of a piriform sinus (Makay et al, 2008; Obon Azuara et al, 2007) and will cause swallowing problems. Oral bacteria enter the parotid duct, causing infection of the gland.

Nasogastric aspiration is mainly used to remove gastrointestinal secretions and swallowed obstructions. Nasogastric aspiration can also be used in poisoning situations when a potentially toxic liquid has been ingested, for preparation before surgery under anaesthesia, and to extract samples of gastric liquid for analysis. If the tube is used for continuous drainage, it is usually appended to a collector bag placed below the level of the patient's stomach; gravity empties the stomach's contents. It can also be appended to a suction system; however this method is often restricted to emergency situations, as the constant suction can easily damage the stomach's lining. In non-emergency situations, intermittent suction were done without the untoward effects of damage to the stomach lining. Suction drainage is also used for patients who have undergone a pneumonectomy in order to prevent aspiration.

Need for the Study

The Apollo cancer Institute provides intensive care and treatment to chronically ill patients where majority of the post-operative patients are having Nasogastric tube aspiration. Since, the conventional method resulted in to a great hurdle to both patients and healthcare professionals in terms of discomfort, additioal cost, and increased time consumption, exposure to infections and inaccurate measurement etc. The unavailability of standard aspiration bag raised many problems

which interfered in patient care and became a challenging task for the care givers. The conventional method in which the bottle drain was used was the disposable water bottles which frequently fall down due unstable base and less weight. This increases the chance of environmental contamination and ascending infection to the patient. The accurate measurement was impossible as the disposable water bottle does not contain the measuring levels. It was time consuming for the nurses to search the articles to start a nasogastric aspiration. This intended the researchers to develop a standard nasogastric aspiration bag, by using infusion set, three way connector and Jerry can for continuous naso gastric aspiration. An effective brainstorming session with the Nursing team and the surgeons was conducted regarding an alternate method-designed for naso gastric aspiration and discussed with the manufacture for implanting the same in Apollo cancer Institute. The Apollo kaizen project,' Molidrain NG'aspiration bag which was implemented in Apollo speciality hospital showed a promising positive outcome through evident based results.

A closed nasogastric aspiration bag was found to have a beneficial effect on patient outcome and cost of treatment. It plays an important part in achieving clinical excellence in terms of effective patient care and satisfaction where multiple problems encountered by the healthcare professionals and the patient was resolved and the was highly satisfactory feedback from the surgeons also.

This resulted in effective brainstorming session with the nursing team and the surgeons to find an alternate method and designed a type of nasogastric aspiration collection bag which was later discussed with manufacture for implanting the same in Apollo cancer institute. The newly designed nasogastric aspiration was named as "Molidrain bag" by the manufacturer and the concurrence was taken from the

surgeons and the nursing team. The molidrain bag as a trial was first implemented in surgical ward for post-operative patients requiring continuous drain of nasogastric content and found to be feasible and effective.

Statement of the Problem

A Study to Assess the Effectiveness of Molidrain Bag Vs Bottle drain Upon Nursing Competency of Naso Gastric Aspiration among Post Abdominal Surgery Patients at Selected Hospital in Chennai.

Objectives of the Study

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Operational Definitions

Effectiveness

In this study it refers the degree of improvement in terms of the nursing competency of nasogastric aspiration using the molidrain bag among the post abdominal surgery patients as measured by comparing the level of the nursing competency of nasogastric aspiration among post abdominal surgery patients between molidrain bag group and bottle drain group.

Molidrain Bag

In this study it refers to a device designed by the researcher and manufacturer for nasogastric aspiration among the post abdominal surgery patients by using infusion set, three way connector and Jerry can.

Bottle Drain

In this study it refers to a device prepared by conventional method for nasogastric aspiration by using infusion set, three way connector and empty intravenous fluid bottle container or the disposable water bottle.

Naso-gastric Aspiration

In this study it refers to the process of gastric decompression by the removal of gastric secretions with the help of a Ryle's tube inserted through the nostril into the stomach among the post abdominal surgery patients.

Nursing Competency

In this study it refers to the assessment of degree to which nurse was able to provide standard nursing care for the post abdominal surgery patients who needs continuous nasogastric aspiration. It is measured by the structured observation check

list developed by the researcher which consists of components such as , easy tubing connection, prevention of spillage of aspiration content, accurate measurement of drain, easy observation of drain (colour, consistency), facilitates continuous drainage, reduced time consumption, cost effectiveness, maintenance of hygienic environment among the post abdominal surgery patients with continuous nasogastric aspiration.

Post Abdominal Surgery Patients

In this study it refers to the adult patients those were admitted in the post operative ward after abdominal surgeries and on continuous nasogastric aspiration.

Assumptions

The study assumes that

- The conventional method of using bottles drain for nasogastric aspiration increases the risk of aspiration, breakage, and infection.
- It also cause great hurdle to both patient and healthcare professionals in terms of cost, increased time consumption and inaccurate measurement.
- There is a necessity for a standard model to be designed for nasogastric aspiration to prevent these complications.
- A molidrain designed with the help of jerry can serve as a standard design in preventing these complications.

Null Hypothesis

Ho1: There will be no significant difference in nursing competency of nasogastric aspiration among post abdominal surgery patients between molidrain bag group and bottle drain group.

Ho2: There will be no significant association between the level of nursing competency of nasogastric aspiration and the demographic variables of post abdominal surgery patients in molidrain group and bottle drain group.

Ho3. There will be no significant association between the level of nursing competency of nasogastric aspiration and the clinical variables of post abdominal surgery patients in molidrain group and bottle drain group.

Ho4. There will be no significant difference in level of acceptance of nurses regarding between molidrain bag and bottle drain for nasogastric aspiration among post abdominal surgery patients.

Limitations

The study was be limited to

- the patients who underwent abdominal surgery with continuous nasogastric aspiration
- one month period of study.

Conceptual framework for the Study

The conceptual framework for a study is the abstract, logical structure that enables the researcher to link the findings to nursing's body of knowledge .it is developed from the existing theory and helps in identifying and defining the concept of interests and proposing relationships among them. The model gives a direction for planning research design, data collection and interpretation of findings.

The conceptual framework of the present study is based on Modified Ottawa Model of Research Use by Graham and Logan (2004). Innovations in knowledge help transfer the continuity of care. The researcher has adopted this model for assessing the knowledge and practice of Nurses on Modified Early Warning System.

Graham and Logan's theory describes an effective change across multiple settings and thus organizations can be challenging. This six-step approach was developed in the context of continuity of care innovations. The method uses the Ottawa Model of Research Use, a knowledge translation model, to guide the process of transferring research to practice.

The Ottawa Model of Research Use follows a six-step approach to guide the implementation of an innovation. The six-step includes

Step-1. Set the stage

Step-2. Specify the innovations

Step-3. Assess the innovations, potential adopters and the environment for Barriers and Facilitators

Step-4. Select and monitor the knowledge translation strategies

Step-5. Monitor innovation adoption

Step-6. Evaluate outcomes of the innovation

Step-1. Set the stage

Determine the available resources that can be used for innovation implementation

The researcher identified the need to develop a new cost effective model for nasogastric aspiration to prevent infection rate and other complications. The new molidrain can help the nurses for improved nursing competency of nasogastric aspiration among the post operative patients. Here the researcher used molidrain bag as an innovation implementation and assessed the nursing competency on using the molidrain bag.

Step-2. Specify the innovations

Clearly articulate what the innovation is and what the implementation involves.

In this study the researcher implemented the use of molidrain bag to assess its effectiveness on the nursing competency for nasogastric aspiration.

Step-3. Assess the innovations, potential adopters and the environment for barriers and facilitators

Identify ways to overcome any barriers to implementation. The researcher provided competency training program on molodrain bag to nurses in the hospital setting to assess their nursing competency. This helped the researcher to identify the barriers in practice.

Step-4. Select and monitor the knowledge translation strategies

Based on the situational assessment, select appropriate strategies and interventions to increase awareness of the innovation and understanding of the innovation, and provide skills or training for adopters to be able to carry out the innovation.

In this study the researcher developed competency training on molidrain bag which includes lecture cum discussion and practice scenarios to carry out the innovations in day to day practice.

Step-5. Monitor innovation adoption

Assess the knowledge translation strategies applied have been sufficient for effective innovation adoption, or if the knowledge translation strategies need to be changed or additional strategies are required. The researcher monitored the nursing

competency with checklist to assess the effectiveness of molidrain for nasogastric aspiration.

Step-6. Evaluate outcomes of the innovation

Evaluate the impact of the innovation on clients/patients, practitioners and systems to determine the effectiveness of the innovation. The researcher evaluated the nursing competency among the nurses for nasogatric aspiration with molidrain bag vs bottle drain

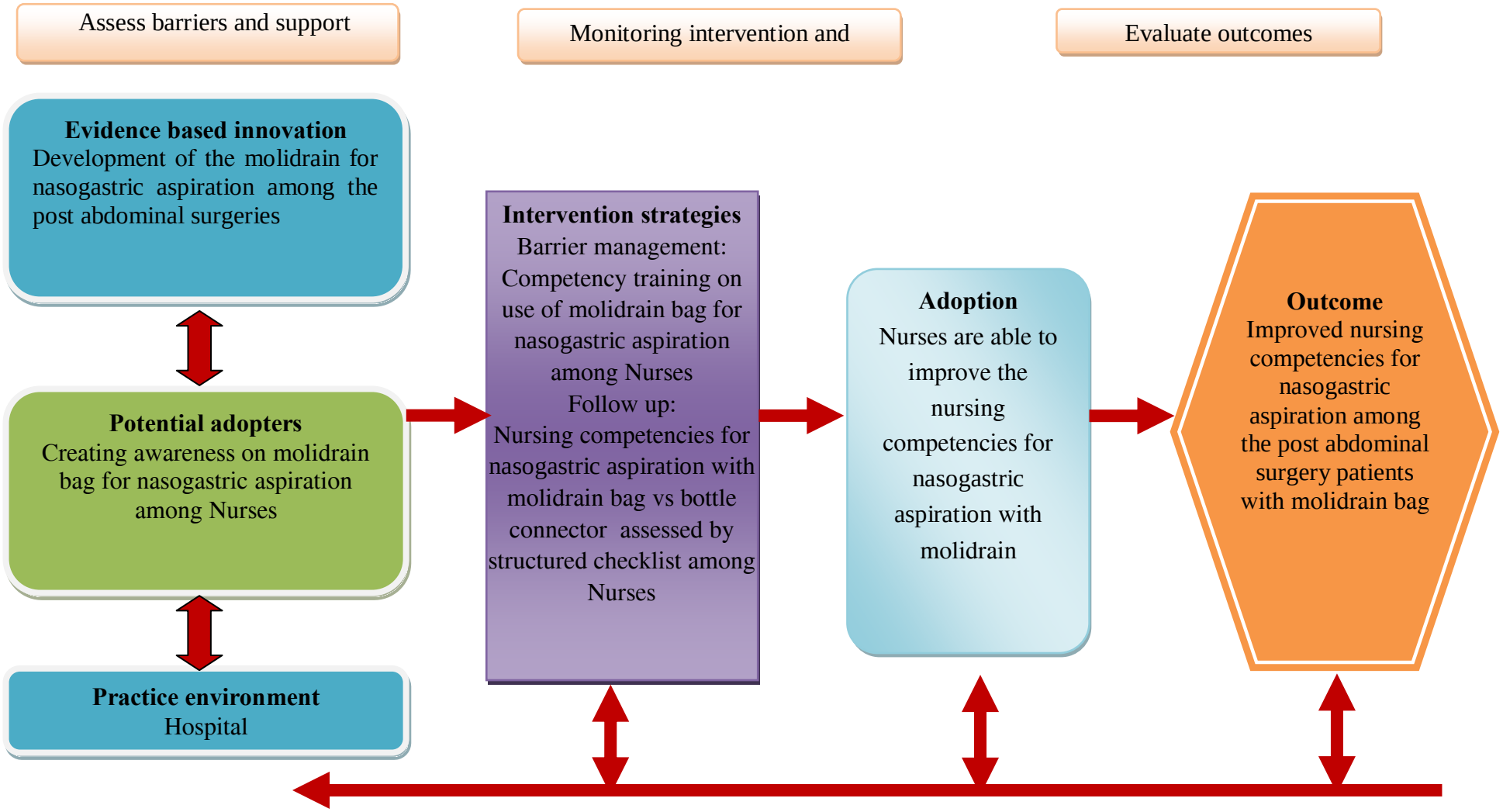


Fig 1: Conceptual Framework Based on Modified Ottawa Model of Research Use (Logan & Graham, 2004)

CHAPTER II

REVIEW OF LITERATURE

Review of literature helps the researcher to build on existing work he or she understands what is already known as topic. (Polit & Beck, 2016).

Review of literature helps to plan and conduct the study in systematic manner. Review of literature is the task of reviewing literature which involves the identification, selection, critical analysis and reporting of existing information on the topic of interest. It provides the basis to locate the data, new ideas that need to be included in the present study. It helps the researcher to find the accurate data that could be used for supporting the present findings and drawing conclusions. The studies gathered through extensive review were grouped into studies related to

- Early ambulation and physiological activity among post abdominal surgery patients
- Role of nasogastric tube in preventing aspiration pneumonia in patients with dysphasia
- Therapeutic effectiveness of post abdominal surgery patients

Prevention of Aspiration Pneumonia in Patients with Dysphasia

In a prospective study **Mamun and Lim (2005),** conducted to compare the incidence of aspiration pneumonia and death in patients with dysphasia who were either fed orally or through a nasogastric tube among 122 patients. The rate of aspiration pneumonia and death were, respectively, 31.2 percent in nasogastric tube-fed patients and 10.3 percent in orally-fed patients (Fisher's exact test, p-value equals 0.007). Multivariate analysis showed that the mode of feeding predicted outcome (p-

value equals 0.03). The rate of aspiration pneumonia and death were 31.2 in NG feeding (Fisher's exact test, p-value equals 0.064). Nasogastric tube-fed patients were more cognitively- and functionally-impaired compared to those on oral feeding.

In this, study patients on nasogastric tube feeding did not have a better outcome against aspiration pneumonia and mortality when compared to those who were on oral feeding. The poorer outcome of nasogastric tube-fed patients could be attributed to their worse cognitive and functional statuses. Larger studies are needed to refute or confirm the usefulness of nasogas tric tube in elderly patients with dysphasia.

Early Ambulation and Physiological Activity for Prevention of Complications among Post Abdominal Surgery Complications

Best et al (2010), conducted a study on prospective study of early ambulation 90 minutes post-left heart catheterization using a retrospective comparison group. The study was conducted at Memorial University School of Nursing, St. John's, NL, Canada. Despite a trend toward a reduction in bed rest time after left heart catheterization (LHC) in many Canadian centers, an evidence-based standard of practice has not been established. Canadian bed rest times range from two to four hours post-LHC. Two recent prospective non-randomized studies (n = 1,000) indicate safety of ambulation at 60 and 90 minutes post-LHC.. Retrospective data from the database and chart reviews were analyzed for a period of six months for the control group on the traditional three to four hour ambulation protocol (n = 402). Prospective data were gathered for six months for the experimental group (n = 193). The study concluded that early ambulation for selected patients at 90 minutes is safe and has the potential to increase both patient comfort and quality of care.

Wang and Jiang (2011) conducted Fast-track rehabilitation program Vs conventional care after colorectal resection: a randomized clinical trial. One hundred and six consecutive patients who underwent fast track rehabilitation program were encouraged to have early oral feeding and movement for early discharge, while 10 consecutive patients underwent conventional care after resection of colorectal cancer. Their gastrointestinal functions, postoperative complications and hospital stay time were recorded. The restoration time of gastrointestinal functions in the patients was significantly faster after fast-track rehabilitation program than after conventional care (2.1 d Vs 3.2 d, P<0.01). The percentage of patients who developed complications was significantly lower 30 days after fast-track rehabilitation program than after conventional care (13.2% Vs 26.9%, P<0.05). Also, the percentage of patients who had general complications was significantly lower 30 days after fast track rehabilitation program than after conventional care (6.6% vs l5.4%, P<0.05). The postoperative hospital stay time of the patients was shorter after fast track rehabilitation program than after conventional care (5 d vs 7 d, P<0.01). No significant difference was observed in the re-admission rate 30 d after fast-track rehabilitation program and conventional care (3.8% Vs 8.7%). The fast track rehabilitation program can significantly decrease the complications and shorten the time of postoperative hospital stay of patients after resection colorectal cancer.

A study on factors influencing abdominal surgical patients at their first postoperative ambulation was conducted by **Chang and Chia Hui** (2011). The purpose of this study to explore the factors, which influences the duration of the patient getting out of bed for those who underwent surgery. Totally 58 subjects were recruited from a surgical ward of a medical center of nursing, using convenient

sampling technique. Observation, interviewing and reviewing medical records were used. The finding revealed that the period taken by the patient to get out of the bed for the first time after surgery was 79.2 hours. Based on the demography data, the patients who are younger, well-educated and female are more likely to experience shorter period of time to get out of the beds. However, after a surgery the patients whose bodies had inserted some tubes than those who have no tube inserted would be more likely to take increase in period of time to get out of the beds. Approximately, there are 50% of the participants with his /her first time to get out of bed after a surgery being encouraged by the health professionals, and the barriers include fear of pain and wound split, 55.2%, 32.8%, respectively. The discomforts experienced by the patients who are at the moment of the first time of getting out of the beds are pain, fainters and lower leg weakness, 67.2%, 58.6%, 34.5% respectively.

Lin and Zhang (2011) conducted study on fast track clinical pathway is designed to streamline patient care delivery and maximize cost effectiveness. It has decreased postoperative length of stay (LOS) and hospital charges for many surgical procedures. Among all patients, 69 (59%) had complicating diseases and/or a history of surgery and 24 patients belonged to American Society of Anaesthesiologists grade III-IV. Compared with the prepathway group, the post pathway group had a significantly shorter postoperative LOS (7 vs. 11 days, $P < 0.01$) with no differences in intraoperative and postoperative complications ($P = 0.814$), mortality ($P = 0.606$), and readmission rate ($P = 0.424$). Implementation of the fast track clinical pathway is an effective and safe method for reducing postoperative LOS and hospital charges for high-risk patients undergoing elective liver resection.

There are many complications might occur following abdominal surgery. Some of the common complications that could be named include postoperative ileus, anastomosis leakage, and infection. Besides that, the typical complications after operation in general such as electrolyte imbalance, delirium, respiratory failure, etc., could also occur among abdominal surgery population (**Deters,** 1987, **Zinner & Asley**, 2007).

Massey (2012), Conducted study on randomized trial of rocking chair motion on the effect of postoperative ileus duration in patients with cancer recovering from abdominal surgery. The patients undergo abdominal surgery commonly experience postoperative ileus. The study used sample of 66 underwent randomized trial divided into 34 patients in the experimental group and 32 patients in the control group. The experiment group received standard care (moved out of bed, sit in a chair and begin ambulating) and racking chair intervention in the first postoperative day. The control group received only standard care. Participants in the experimental group had shorter duration of postoperative ileus, no effect on medication use and time to discharge.

A single-blind, multicenter, randomized control conducted by Van and Bernhardt (2012) successfully delivered more and earlier therapy to acute stroke patients. The author hypothesized that physical therapy would be significantly different between treatment arms in a trial of very early and frequent mobilization (VEM) and that immobility-related adverse events would be associated with therapy dose. Timing, amount and type of therapy recorded throughout the trial adverse events were recorded to 30 months. The study results revealed that total of 71 patients (SC n=33), VEM n=38) received therapy in the first 2 weeks of stroke. Schedule (hours to first mobilization, dose per day, frequency and session duration) and nature

(percentage out of bed activity) of therapy differed significantly between groups (p<.001) for all components. Mobilization was earlier, happened average 3 times per day in those receiving VEM, with the proportion of out of bed activity double in VEM session (median SC, VEM with the proportion of out of bed activity double in VEM session (median sc 42.5%, VEM 85.5%) SC consisted of 17 minutes of occupational and physiotherapy per day and was the same between groups. Number of immobility related adverse events 3 months post stroke was not associated with therapy dose of frequency. The study conducted that usual care and intervention therapy provided to patient from admission to 14 days after stroke. The therapy scheduled was markedly different in the intervention.

Role of Nasogastric Tube in Preventing Aspiration Pneumonia in Patients with Dysphasia

Gomes et al (2014) through research findings illustrated that the presence of a nasogastric feeding tube is associated with colonization and aspiration of pharyngeal secretions and gastric contents leading to a high incidence of Gram-negative pneumonia in patients on enteral nutrition. However, other aspects may be equally important and should also be considered when evaluating a patient suspected of having aspiration and aspiration pneumonia. The mechanisms responsible for aspiration in patients bearing a nasogastric feeding tube are loss of anatomical integrity of the upper and lower esophageal sphincters, increase in the frequency of transient lower esophageal sphincter relaxations, and desensitization of the pharyngoglottal adduction reflex.

Aspiration is one of the most common complications in patients with NG tube. The source of aspiration is due to the accumulation of secretions in the pharynx of

reflux gastric contents from the stomach into the pharynx. **T**he use of a nasogastric feeding tube and the administration of food increase gastric pH and lead to colonization of gastric secretions. It has also been suggested that gastric bacteria could migrate upward along the tube and colonize the pharynx.

Wei et al (2014) Department of Family Medicine and Continuing Care, Singapore General Hospital, Singapore, conducted an study in preventing pneumonia in patients with dysphagia. Multiple search strategies were used to obtain a comprehensive review of relevant articles. Outcome measures included the incidence of aspiration pneumonia, improvements in swallowing and cough reflex. Thus the study resulted that aspiration pneumonia can be prevented and the interventions discussed were summarized by the following categories, Oral hygiene, Diet modifications and postural compensation, Type and feeding regimen for artificial enteral feeding, pharmacological, expiratory muscle strength training and complementary alternative medicine. Although all the subjects in the studies appraised have underlying dysphagia, the underlying disease states causing dysphagia were heterogenous and the severity of the dysphagia was not well detailed in most studies. Potential confounders affecting the risk of aspiration pneumonia were not addressed. Consequently, more robust research studies are required with more proper definition on the severity of dysphagia and to address potential confounders.

Therapeutic Effectiveness of Post Abdominal Surgery Patients

An observational study was conducted in Michigan society among 16,084 patients who had undergone anterior peritoneal surgeries in the year of 2014. Risk prediction model was 19 estimated multivariable analysis identified post-operative pneumonia occurred in 3.30% of patients and it predicted preoperative factors,

including demographics, laboratory values,comorbid disease, pulmonary and cardiac function. This model used to information to reduce a patient's preoperative risk of pneumonia through rehabilitation (**Strobel,** 2014).

Lemma (2015) has conducted multicenter, prospective, patients for elective abdominal surgeries. Total of 411 patients were randomly assigned 203 patients to continuous ryles tube aspirations and 208 patients Jejenostomy. According to the intention to treat analysis, the rate of the composite primary end point was significantly lower (unadjusted P = .009, adjusted P = .010) in the elective abdominal surgery (5.8% vs 13.3%). The risk of experiencing the primary end point was significantly greater for the Colorectal surgery(unadjusted odds ratio, 2.51; 95% confidence interval, 1.23-5.10; P = 011; adjusted odds ratio, 3.07; 95% confidence interval, 1.32-7.14; P = .009,the continuous aspiration among the post abdominal bypass reduces early mortality and morbidity in high-risk patients.

The impact of post abdominal surgery on the clinical and functional status among 57 patients was evaluated by **Luciana and Oliveira (**2016). Stratified analysis revealed the overall complication rate as 19.1% with no significant difference between anastomosis and laprotomy surgeries. Lower anterior peritoneal resection rate was compared with Colorectal surgeries (p=0.01). Laprotomy procedure was performed at 1 year (p=0.016). Proper treatment of patients with colorectal cancer is a challenge due to its complexity.

Development of Nursing Evidence-Based Practice Protocol

The development of evidence based practice protocol was possible after an extensive systematic review was carried out by the researcher. The electronic data

bases and various hand search strategies were adopted for the systematic review. The search engines included were PubMed Central, Google Scholar, Science Direct, Cochrane Library and Proquest. All the studies identified through this search were subjected to quality check by using Johns Hopkins Evidence Practice Model (JH EPM). The researcher obtained permission from Johns Hopkins University (https://www.ijhn-education.org) to use the Johns Hopkins Nursing Evidence Based Practice (JHN EBP) model and tools. (Annexure K)

The Protocol includes the following aspects in this study:

1. Nursing Evidence Based Practice Question Development
2. PRISMA Flow Diagram
3. Characteristics of included papers (Study design wise and Intervention wise)
4. Individual Evidence Summary

Nursing Evidence Based Practice Question Development

What is the problem and why is it important?

This research focuses on postoperative outcomes and functional status among post abdominal surgery patients. This research work was undertaken by the researcher to seek evidence as every post abdominal surgery patients subjectively have been facing one or the other poor functional status.

What is the current practice?

Currently the bottle drain was used for nasogastric aspiration among the post abdominal surgery patients. This resulted in accidental spillage, frequent blocking of the tubes, discomfort during ambulation, inaccurate measurement of the aspirate and search of many materials needed for starting a nasogastric aspiration such as old IV

bottle, plasters and scissors, foot stool to keep the bottle and need of 30 minutes to connect a bottle drain.

What is the focus of the problem?

The focus of the problem is effective nursing competency for continuous nasogastric aspiration. Molidrain will prevent accidental spillage, block of the tube and infection rate. The moldrain tube could be made easy available as a single piece and aids in accurate measurement of the aspirate content and hygiene. Therefore the routine aspiration bag gastric contents after post operation for gastric decompression using nasogastric aspiration bag “Molidrain NG” for continuous drainage was found to have a beneficial impact on the patients and care givers satisfaction resulting in standardize care and practices that require minimum training and easy to handle.

How was the problem identified?

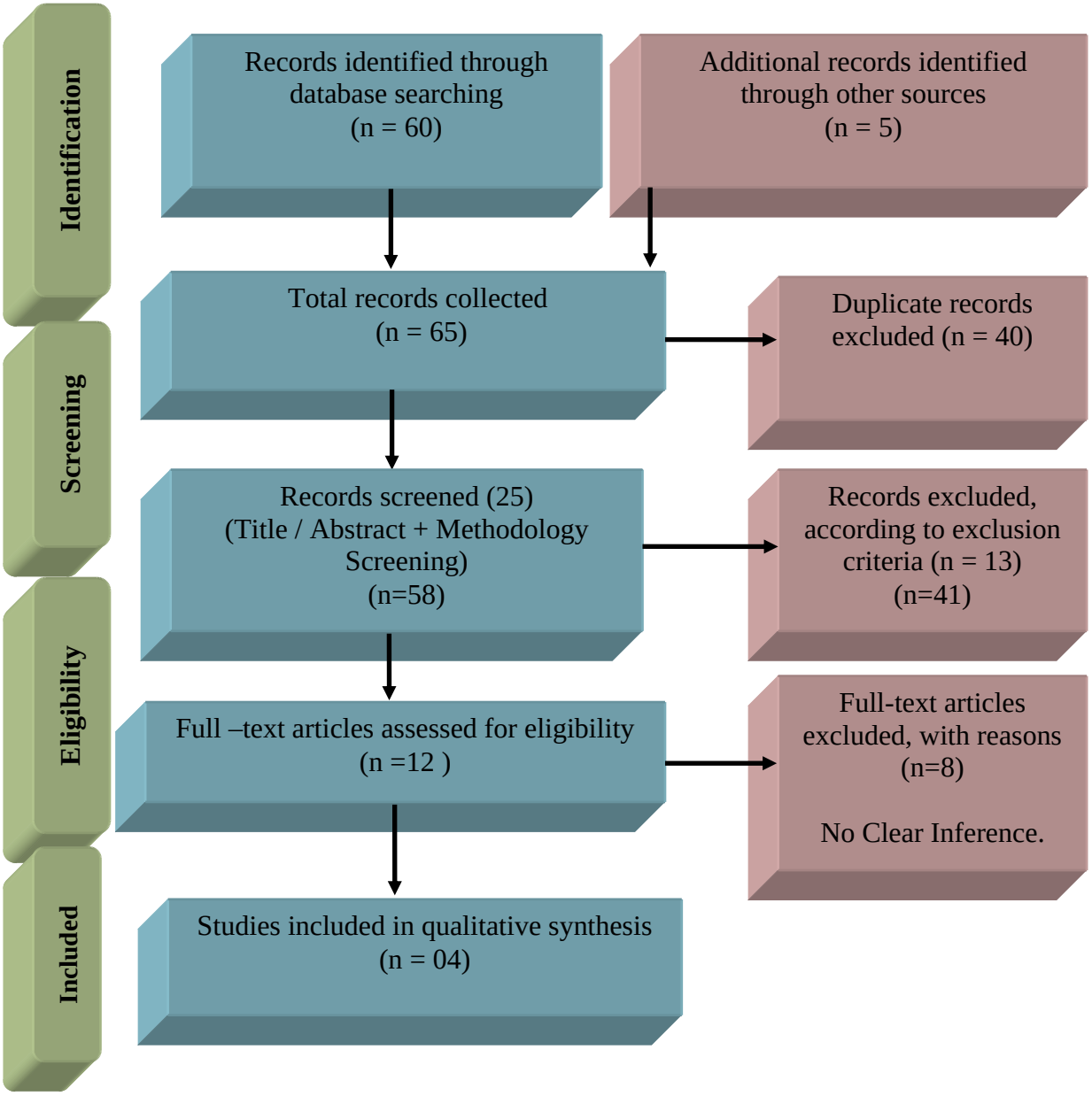
The problem was identified by the researcher when the process of starting a Nasogastric aspiration with bottle drain interfered in patient care and become a challenging task for the care givers.

What is the scope of the problem?

The process of starting a nasogastric aspiration with bottle drain resulted in inaccurate measurement of the aspirate fluid volume, difficult to observe the colour, consistency, contamination while handling the aspiration fluid, difficult to mobilize the patient and time consuming process.

What are the PICO Components?

- P - Population / Patient. Here it is the post abdominal surgery patients with nasogastric aspirations.
- I – Intervention. Here molidrain bag is the intervention planned.
- C – Comparison. A conventional comparison group is also identified for whom the bottle drain was connected for nasogastric aspiration.
- O – Outcome – patient satisfaction, surgeons satisfaction, comfortable for mobilization, easy to observe the content, readily available in the pharmacy, decrease exposure to infection, reduces the spillage of the aspirate content..



2.FPRISMA Flow Diagram depicting the different phases of Systematic Review

EBP Question: Is the Continuous Ryles Tube Aspiration Process is Effective among Post Abdominal Surgery Patients

Table.1 Individual Evidence Summary of RCT's based on effectiveness of Continuous Naso-gastric aspiration

Article No	Author & Date	Title / Objective	Sample, Sample Size, Setting and tool used	Study findings that help answer the EBP question	Evidence Level & Quality
1.	Hester Vermeulen et al. (2006)	**Title:** Nasogastric Intubation After Abdominal Surgery A Meta-analysis of Recent Literature **Objective:** To determine whether refraining from nasogastric intubation (NGI) in patients after abdominal surgery will result in the same therapeutic effectiveness as using NGI.	**Sample** – Patients with abdominal surgery **Sample Size-** Two of them independently selected trials based on randomization, abdominal surgery in patients, early vs late removal of the NGI, and reporting at least 1 of the following end points: hospital stay, gastrointestinal function, and postoperative complications. **Tool used** -structured list, Data were entered and analyzed by	This meta-analysis of the recent literature shows that routine postoperative NGI does not offer any clinically relevant benefits for patients after abdominal surgery but merely results in some undesired patient-relevant outcomes, such as substantial (and often neglected) discomfort and return to a liquid or regular diet, whereas hospital stay is not shortened by using NGI. In conclusion, the routine use of NGI after abdominal surgery should be abandoned because it does not lead to any benefits but only to substantial discomfort and possibly even harm of the patient.	Level I Randomized controlled trial

Article No	Author & Date	Title / Objective	Sample, Sample Size, Setting and tool used	Study findings that help answer the EBP question	Evidence Level & Quality
			means of dedicated software from the Cochrane Collaboration.		
2.	Nadia Shamil et al.(2010)	**Title** - is nasogastric decompression necessary in elective enteric anastomosis? **Objective-** to assess whether routine use of nasogastric decompression in elective enteric anastomosis can be safely omitted.	S**amples** – Patients **Sample size**-93patients **Setting-** conducted a prospective observational study in Surgical Ward 2, Jinnah Postgraduate Medical Centre, Karachi from January 2008 to December 2009 to assess whether routine use of nasogastric decompression in elective enteric anastomosis can be safely omitted	There were 93 patients, of which 62 were male and 31 were female. The mean age was 31 years with a range from 15–70 years. Almost 80% were below the age of 40. Nausea occurred in 74.7% of all patients, yet only 5.9% had vomiting and one had abdominal distension for which the NG decompression done. Time of passing flatus was on average two days. Mean length of hospital stay was 5.7 days with a range from 3–27 days. Hospital stay usually increased secondary to wound infection which occurred in 11.7% of patients. There was anastomotic leak and wound dehiscence in a single patient	Level I Randomized controlled trial

Article No	Author & Date	Title / Objective	Sample, Sample Size, Setting and tool used	Study findings that help answer the EBP question	Evidence Level & Quality
				which on re-exploration found to be due to obstruction distal to anastomosis. Patient had any pulmonary complication. One patient died on 3rd post operative day after reversal ileostomy, of which the cause of death not known, although on gastrograffin follow-through there was no leak. Except for incidence of minor symptoms like nausea or vomiting, omission of NG tube did not lead to any serious complication like anastomotic leak, pulmonary complications wound dehiscence Nasogastric decompression can safely be omitted from a routine part of postoperative care after elective enteric anastomosis.	

Article No	Author & Date	Title / Objective	Sample, Sample Size, Setting and tool used	Study findings that help answer the EBP question	Evidence Level & Quality
3.	Nargis Ahamed, Debarchana Mondal.(2014)	**Title** –Assessment of Knowledge and Practice of Staff Nurses Regarding Ryle's Tube Feeding in a Selected Hospital of Kolkata, West Bengal. **Objective** – to assess the knowledge and practice of staff nurses regarding Ryle's tube feeding, to find out relationship between knowledge and practice and to find out association with knowledge, practice and some selected variables	**Sample Size**- 42 staff nurses were selected by convenient sampling technique from the intensive therapeutic unit and high dependency unit of Rabindranath Tagore International Institute of Cardiac Sciences hospital. A structured knowledge questionnaire and structured observation checklist were Used to collect data.	It was found that 32 (76%) participants had adequate knowledge and all (100%) had more than average practice level regarding Ryle's tube feeding. There was moderately positive Correlation between knowledge and practice of staff nurses regarding Ryle's tube feeding(r=0.46). There was significant association between knowledge with professional qualification and period of experience but there was no significant association found between practice with period of experience and professional qualification, it was found that the hospital was not having any written guideline regarding Ryle's tube feeding for the patients. So the researchers recommended for continuous teaching	Level IV Descriptive Survey design

Article No	Author & Date	Title / Objective	Sample, Sample Size, Setting and tool used	Study findings that help answer the EBP question	Evidence Level & Quality
				program and establishment of evidenced based guideline in the hospital on Ryle's tube feeding.	
4.	Nicholas Palamidessi MD,2010	**Title -** Nasogastric aspiration and lavage in emergency department patients with hematochezia or melena without hematemesis Objective- The utility of nasogastric aspiration and lavage in the emergency management of patients with melena or hematochezia without hematemesis is controversial. This evidence-based emergency medicine review evaluates	Samples- Participants included ED patients presenting with melena or hematochezia without hematemesis. Sample size- all patients with hematochezia or melena and performed esophagogastroduodenal endoscopy (EGD). Three retrospective studies met our inclusion and exclusion criteria.	The prevalence of an upper GI source for patients with melena or hematochezia without hematemesis was 32% to 74%. According to the included studies, the diagnostic performance of the nasogastric aspiration and lavage for predicting upper GI bleeding is poor. The sensitivity of this test ranged from 42% to 84%, the specificity from 54% to 91%, and negative likelihood ratios from 0.62 to 0.20. Only one study reported the rate complications associated with nasogastric aspiration and lavage (1.6%). Nasogastric aspiration, with or without	LEVEL II cross-sectional studies

Article No	Author & Date	Title / Objective	Sample, Sample Size, Setting and tool used	Study findings that help answer the EBP question	Evidence Level & Quality
		the following question: does nasogastric aspiration and lavage in patients with melena or hematochezia and no hematemesis differentiate an upper from lower source of gastrointestinal (GI) bleeding?		lavage, has a low sensitivity and poor negative likelihood ratio, which limits its utility in ruling out an upper GI source of bleeding in patients with melena or hematochezia without hematemesis.	

There were 4 evidences on the topic, found appropriate for individual evidence summary and they were tabulated. All of the evidences belong to level I, II and level V which is coming under evidence type, randomized controlled trial, cross sectional study and systematic review.

CHAPTER III

RESEARCH METHODOLOGY

Research methodology of research is defined as the way of information from participants is gathered in order to answer the research questions or analyze the research problem. It involves a systematic procedure by which researcher had from the initial identification of problem to find its conclusion (Polit and Beck, 2015).

This chapter deals with a brief description of the different steps undertaken by the investigator for the study. The research methodology includes research approach, the setting, population, and sample, sampling technique, selection of tool, content validity, reliability, pilot study, data collection procedure & plan for data analysis.

The present study was conducted to assess the effectiveness of molidrain bag Vs bottle drain on nursing competency of nasogastric aspiration among post abdominal surgery patients.

Research Approach

According to Polit and Beck (2015), an evaluation research is most often used when the researcher is trying to determine the effectiveness of a complex program rather than a specific entity. Evaluation research tends to evaluate a programming practice or an intervention that is embedded in organizational context.

In this study an evaluative approach was used to evaluate the effectiveness of the molidrain vs bottle drain by comparing the nursing competency of nasogastric aspiration between molidrain and bottle drain among post abdominal surgery patients.

Research Design

According to Polit and Beck (2015), a research design is an overall plan for addressing a research question, including specifications for enhancing the integrity of the study. The research design is the plan, structure and strategy of investigation of answering the research option. It is overall blue print to research to select and carry out the study. In this study a true experimental post test only research design was used in which the post abdominal surgery patients with molidrain bag were assigned to group I and patients with bottle drain for nasogastric aspiration were assigned Group II. The research design is depicted as follows

Molidrain Group : R X1 O1

Bottle Drain Group : R X2 O1

O1- Post test assessment of nursing competency of nasogastric aspiration with molidrain bag vs bottle drain among post abdominal surgery patients.

X1- Post abdominal surgeries with molidrain for nasogastric aspiration.

X**2-** Post abdominal surgeries with bottle drain for nasogastric aspiration.

R – Randomization: Every even number of post abdominal surgery patients were allotted to molidrain group and every odd number were allotted to bottle drain group.

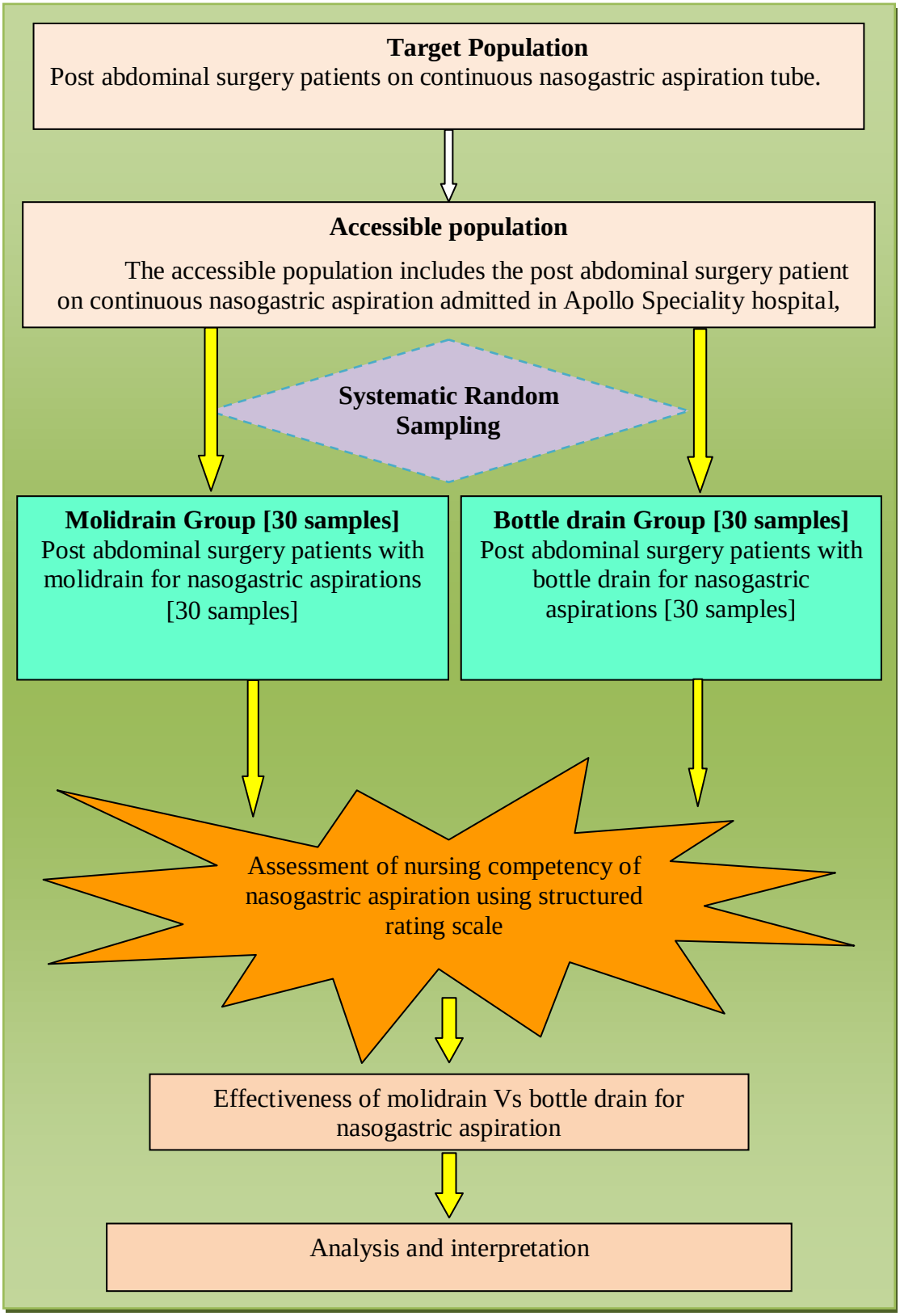


Fig.3.Schematic Representation of Research Design

Variable

A variable is an attribute that varies on different values when form time to time or person to person (Polit and Beck, 2015).

Independent Variables

The variable that is believed to cause or influence the dependent variable is called as independent variable (Polit and Beck, 2015).

In this study the independent variables were molidrain bag and bottle drain used for nasogastric aspiration among the patient with post abdominal surgeries

Dependent Variable

The variable hypothesized to depend on or be caused by another variable is the dependent variable (Polit and Beck, 2015).

In this study the dependent variable was the nursing competency of nasogastric aspiration with molidrain bag and bottle drain among the patients with post abdominal surgeries, as measured by structured observation checklist developed by the investigator.

Attribute variable

Variable that describes the study sample characteristics are termed as attribute variables (Polit and Beck, 2015).

In this study the attribute variable includes demographic variable of the postoperative abdominal surgery patients such as age, gender, habit of smoking, alcoholism, residential area, type of family and occupation. The clinical variables such as body mass index, history of hypertension, diabetes mellitus, COPD, renal

disorder, cancer, previous surgery, starting day of the ambulation and head end elevation of the post abdominal surgeries

Research Setting

The physical location and condition in which a data collection takes place in a study (Polit and Beck, 2015).

The study was conducted in Apollo Specialty Hospital, 256 bedded hospital with NABH accreditation, which is powered by a relentless pursuit of perfection by specialists to provide integrated specialized care for patients with oncological and neurological problems. The settings were chosen on the basis of feasibility and cooperation of concerned authorities to conduct the study.

Population

The population is the entire aggregation of cases which meet designed set of criteria (Polit and Beck, 2015).

Target Population

Target population is the group population that the researcher aims to study and to whom the study findings will be generalized. The target population in this study refers to the post abdominal surgery patient on continuous nasogastric aspiration .

Accessible Population

It is the group that investigator finds in the study area. The accessible population includes the post abdominal surgery patient on continuous nasogastric aspiration admitted in Apollo Speciality hospital, Teynampet.

Sample

The Sample is the subset of the population, selected to participate in the study (Polit & Beck 2015).

The sample in this study include the post abdominal surgery patients on continuous nasogastric aspiration admitted in Apollo Speciality hospital, Teynampet who satisfy the inclusion and exclusion criteria.

Sample Size

The samples in this study include 30 post abdominal surgery patients who were connected with molidrain bag for nasogastric aspiration and 30 post abdominal surgery patients who were connected with bottle drain for nasogastric aspiration.

Sampling Technique

Polit & Beck (2016) stated that sampling refers to the process of selecting a portion of the population to represent the entire population. In this study the patients were selected by systematic random sampling that is every odd number sample were included in the molidrain group and every even number were included in the bottle drain group.

Sampling Criteria

Inclusion criteria

The study includes

- all post abdominal surgery patients with continuous nasogastric aspiration
- Who are willing to participate in the study

Exclusion criteria

- All post operative patients excluding abdominal surgery
- Who are not willing to participate in the study

Selection and Development of the Study Instruments

The instruments used in the study were

- Demographic variable proforma of the post abdominal surgery patients
- Clinical variable proforma of the post abdominal surgery patients
- Structured observation check list to assess nursing competency for nasogastric aspiration
- Rating scale to assess the level of acceptability among the nurses regarding molidrain bag and bottle drain.

Demographic Variables Proforma of the Post Abdominal Surgery Patients

This proforma was used by the researcher to collect the demographic variables of the post abdominal surgery patients such as age, gender, habit of smoking, alcoholism, residential area, type of family and occupation.

Clinical Variable Proforma of the Post Abdominal Surgery Patients

In this study, clinical variables of the post abdominal surgery patients includes body mass index, history of hypertension, diabetes mellitus, COPD, renal disorder, cancer, previous surgery, starting day of the ambulation and head end elevation.

Structured Observation Checklist to Assess Nursing Competency for Naso-gastric Aspiration

In this study it is a structured questionnaire prepared by the researcher based on the review of literature and the expert guidance to measure to nursing competency for nasogastric aspiration among post abdominal surgery patients with molidrain bag and bottle drain. It includes 15 items such as patient comfort, easiness for mobilization, prevention of backflow of the aspiration content, content easy tubing connection, prevention of spillage of aspiration content, accurate calibration of drain, accurate measurement of drain, easy observation of drain (colour, consistency), facilitates continuous drainage, reduced time consumption, cost effectiveness, prevention of bad odour due to spillage, ease and safe disposal of the content, maintenance of closed system of practice and satisfaction of health care workers. Each component was scored as strongly agree -3, agree-2, disagree-1, strongly disagree-0. The total score of all the 15 components were converted to percentage and interpreted as follows,

Scoring Key

Strongly agree -3 Agree-2 Disagree-1 Strongly disagree-0.

Scoring interpretation

Score	Percentage	Category
< 15	< 50%	Poor standard of practice
15-30	51-75%	Good standard of practice
31-45	76-100%	Best standard of practice

Rating Scale to Assess the Level of Acceptability among the Nurses Regarding Molidrain Bag and Bottle drain

The rating scale was developed by the investigator to assess the ten components of the acceptability among the nurses regarding molidrain bag and bottle drain for nasogastric aspiration for post abdominal surgery patients.

Each component were rated on 4 point rating scale as rated as 4- Highly acceptable, 3- Acceptable, 2- Unacceptable, 1- Highly unacceptable. Total marks scored for 10 items were converted to percentage and the converted percentage is interpreted as the following:

Score	Interpretation
>76%	Highly acceptable
51 – 75%	Acceptable
26 – 50%	Unacceptable
0 – 25%	Highly unacceptable

Psychometric Assessment of the Tool

Content Validity of the Tool

The content validity of the tool will established by getting the expert opinion for the field of experts.

Reliability of the Tool

The reliability of the tool was established by the inter observer reliability for the observation check list and the level of acceptability among the nurses regarding the molidrain bag and bottle drain for nasogastric aspiration, **r = 0.81**

Intervention Protocol

The researcher studied the system and process of nasogastric aspiration using the bottle drain among the post abdominal patients and developed a new model for the naso gastric aspiration. After an effective brainstorming session with the nursing team and the surgeons regarding an alternate standard method was designed for nasogastric aspiration and the researcher discussed with the manufacture for implanting the same in Apollo cancer Institute. The Apollo kaizen project 'Molidrain' bag was develop using a infusion set, three way connector and Jerry can for continuous naso gastric aspiration and the model was explained to the nurses for its effective usage for nasogstric aspiration. The nasogastric aspiration tube was connected to molidrain in group I and the bottle drain was connected to the group II of post abdominal surgery patients. The researcher observed the competency of nurses on using molidrain bag vs bottle drain for nasogastric aspiration by using structured observation checklist. Then the level of acceptability regarding comprehensive training Programme among ICU staff nurses was done after conducting the post test.

Pilot Study

According to (Polit & Beck, 2012) stated that pilot study is the miniature of actual study, in which the instruments are administered to the subject drawn from the same population. The purpose was to find the feasibility and practicability of the study and to finalize the tools. Tools will be modified as required. Pilot study should be conducted on a sample comprising of at least 10% population for the main study.

Protection of Human Rights

- Permission will be obtained from the Principal, Apollo College of Nursing, Chennai.
- The study will be conducted after getting approval from Ethical Committee, Apollo Hospitals, Chennai.
- Permission will be obtained from the authority of selected hospitals in Tamil Nadu
- The participants will be given explanation of the study and written consent will be obtained from them.
- Confidentiality of the data will be maintained throughout the study.
- Debriefing will be done after the intervention.

Data Collection Procedure

Data collection is the process of gathering information needed to address a research problem. After obtaining permission from college and hospital authority samples were chosen by using the stratified random sampling technique, every even numbered 30 samples were allotted to molidrain group and every odd numbered 30 samples were allotted to bottle drain group who meets inclusion and exclusion criteria among post abdominal surgery patients in selected hospital. After initial introduction the investigator obtained consent from the clients to participate in the study. Data was collected for a total period of 6 weeks on selected samples. First, data regarding demographical and clinical variables of the post abdominal surgery patients were collected. After that investigator introduced the molidrain bag for nasogastric aspiration for group I and bottle drain was used for group II for nasogastric aspiration. The researcher observed the nursing competency among the nurses on using molidrain bag vs bottle drain by using observation checklist. Then the level of acceptability was measured by using rating scale regarding using molidrain bag vs bottle drain for nasogastric aspiration among the nurses. The collected data were organized for data analysis.

Plan for Data Analysis

Table.2 Data was analyzed by using descriptive (Frequency, percentage, mean, standard deviation) and inferential statistics.

Statistics	Test	Purpose
Descriptive	Frequency and Percentage	• To describe the demographic variables, and clinical variable of post abdominal surgery patients • To describe the nursing competency of nasogastric aspiration in molidrain bag group and bottle drain group • To describe the level of acceptability among the nurses regarding molidrain bag vs bottle drain
	Mean and Standard Deviation	• To describe the scores of nursing competency of nasogastric aspiration in molidrain bag group and bottle drain group
Inferential	Independent - t test	• To find out the difference in nursing competency of nasogastric aspiration between molidrain bag group and bottle drain group.
	Chi square test	• To determine the association between level of nursing competency of nasogastric aspiration and the selected demographic and clinical variables of post abdominal surgery patients in molidrain bag group and bottle drain group.

Summary

This chapter dealt with the research approach, research design, setting, population and sample, sampling technique, sampling criteria, development of study instruments, reliability and validity of the instruments, pilot study, data collection procedure and plan for data analysis.

CHAPTER IV

ANALYSIS AND INTERPRETATION

The analysis is defined as the method of organizing data in such a way that the research questions can be answered. Interpretation is the process of examining the result and simplification of the findings within a broader context (Polit & Beck, 2012).

This chapter deals with the analysis and interpretation including both descriptive and inferential statistics. Statistics is the field of study concerned with techniques or methods of collection of data, classification, summarization, interpretation, drawing inferences, testing of hypothesis, making recommendations, etc (Mahajan, 2004).

The data was analyzed according to the objectives and hypothesis of the study. Analysis of the study was compiled after all the data was transferred to the master coding sheet. The investigator used descriptive and inferential statistics for analysis. The data were analyzed, tabulated and interpreted using appropriate descriptive and inferential statistics.

Organization of the Findings

The findings of the study were organized and presented under the following headings:

- Frequency and percentage distribution of demographic variables of post abdominal surgery patients with Molidrain bag and Bottle drain for nasogastric aspiration.

- Frequency and percentage distribution of clinical variables of post abdominal surgery patients with Molidrain bag and Bottle drain for nasogastric aspiration.
- Frequency and percentage distribution of level of nursing competency of nasogastric aspiration among post abdominal surgery patients in Molidrain bag group and Bottle drain group.
- Comparison of nursing competency of nasogastric aspiration among post abdominal surgery patients between Molidrain bag group and Bottle drain group.
- Comparison of Mean and Standard Deviation of Nursing Competency of Nasogastric Aspiration among Post Abdominal Surgery Patients in Molidrain Group and Bottle Drain Group.
- Frequency and percentage distribution of level of acceptability among the nurses regarding Molidrain bag and Bottle drain
- Association between the level of nursing competency of nasogastric aspiration and the demographic variables of post abdominal surgery patients in Molidrain group and Bottle drain group .
- Association between the level of nursing competency of nasogastric aspiration and the clinical variables of post abdominal surgery patients in Molidrain group and Bottle drain group.

Table: 3 Frequency and Percentage Distribution of Demographic Variables of Post Abdominal Surgery Patients.

Demographic variables	Molidrain bag group (n=30)		Bottle drain group (n=30)	
	n	p	n	p
Age (in years)				
≤35	00	00	00	00
36-50	15	50	05	16.7
≥50	15	50	25	83.3
Gender				
Male	11	36.7	25	83.3
Female	19	63.3	05	16.7
Residence				
Urban	23	76.7	02	6.7
Semi Urban	07	23.3	27	90
Rural	00	00	01	3.3
Type of Family				
Single	02	6.7	00	00
Nuclear	12	40	30	100
Joint	16	53.3	00	00
Occupation				
Private	3	10	0	0
Government	17	23.3	29	96.7
Self employment	14	46.7	1	3.3
Unemployment	6	20	0	0

It can be noted from the above table that half of the post abdominal surgery patients in molidrain group and majority of the post abdominal surgery patients in bottle drain group were belonging to the age group of >50 years (50% and 83.3%) respectively. Majority of them in molidrain group were females (63.3%), while most of them in bottle drain were males (83.3%), more than half of them in molidrain group were from joint family (53.3%) but all of them in bottle drain group were belonging to nuclear family (100), less than half of them in molidrain group were self employed (46.7%), while most of them were working in government sector in bottle drain group (96.7), majority of them in molidrain group were from urban area (76.7%) and most of them in bottle drain group were residing in semi urban area (90%) respectively.

Fiq 4. depicts that most of them in molidrain group and more than half of them in bottle drain group were non smokers (90% and 56.7%) respectively.

Fig 5. Shows that most of them in molidrain group and majority of them in bottle drain group were non alcoholics (96.7% and 73.3%) respectively.

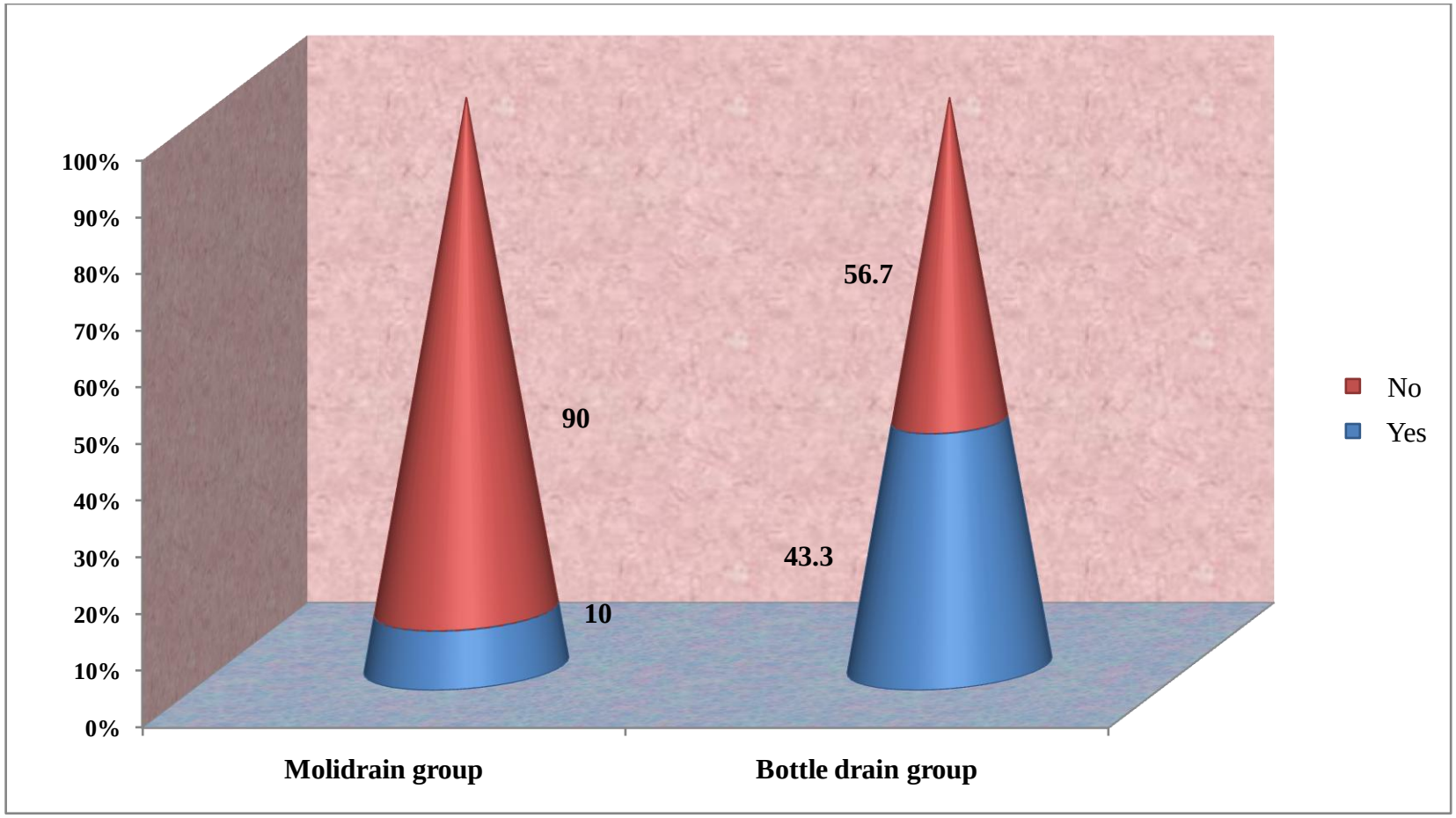


Fig. 4. Percentage Distribution of Post Abdominal Surgery Patients Based on Habit of Smoking

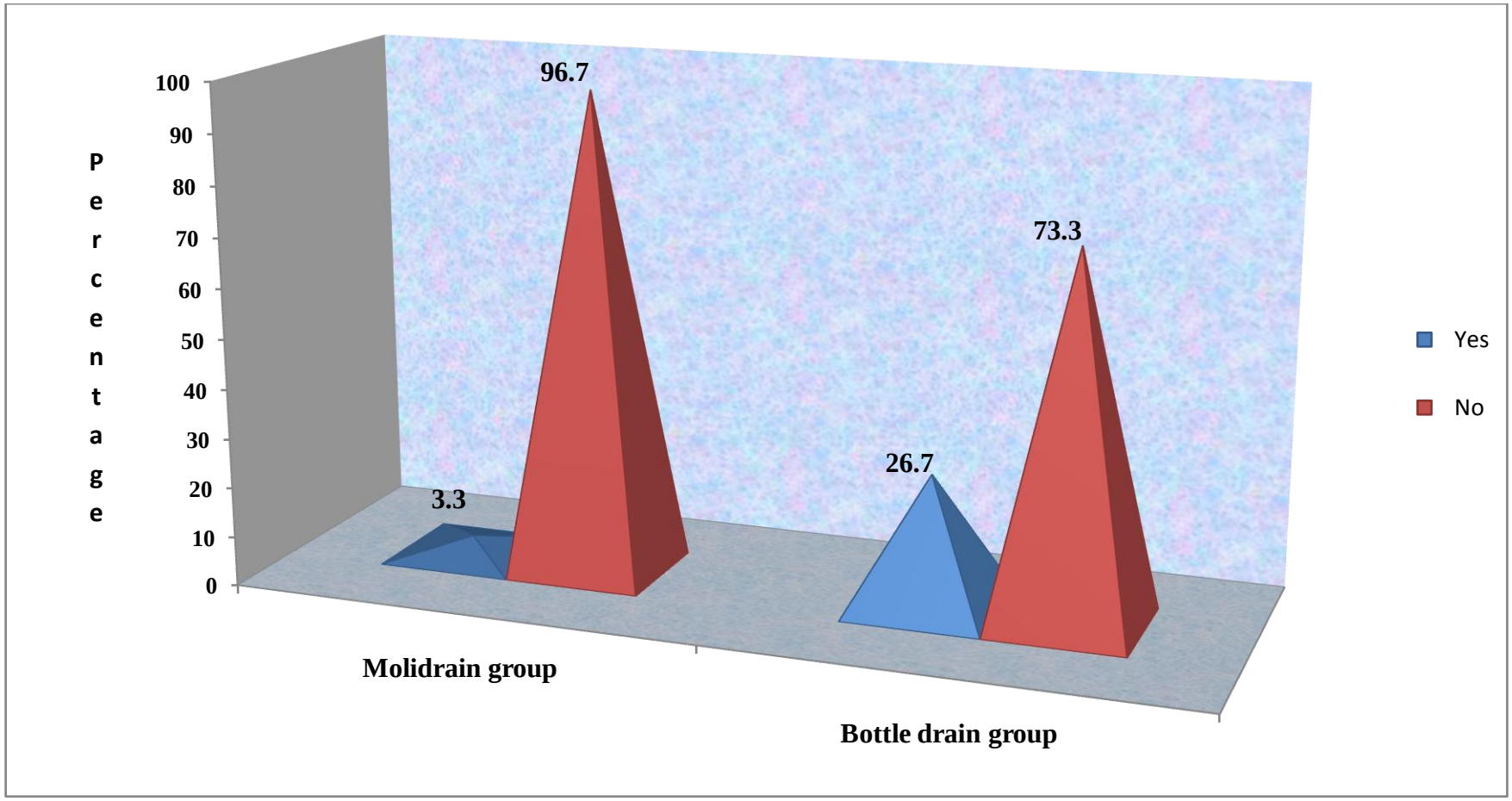


Fig. 5. Percentage Distribution of Post Abdominal Surgery Patients Based on Habit of Alcoholism

Table: 4 Frequency and Percentage Distribution of Clinical Variables of Post Abdominal Surgery Patients.

Demographic variables	Molidrain bag group (n=30)		Bottle drain group (n=30)	
	f	%	f	%
BMI (category)				
≤ 18.5	02	07	00	00
18.5-25	28	93.3	28	93.3
25-30	00	00	02	06.7
≥ 30	06	00	00	00
Hypertension				
Yes	09	30	30	100
no	21	70	00	00
Diabetes Mellitus				
Yes	07	23.3	27	90
no	23	76.7	03	10
COPD				
Yes	00	00	01	03.3
no	30	100	29	96.7
Renal Disorder				
Yes	00	00	00	00
no	30	100	30	100
Cancer				
Yes	18	60	29	96.7
no	14	40	01	3.3
Elevation of head(in days)				
≤ 30˚	18	60	18	60
≥ 30˚	12	40	12	40

It can be inferred from the table 4 that most of the post abdominal surgery patients had BMI of 18.5 – 25 in both molidrain group and bottle drain group (93.3%) respectively. Majority of patients in molidrain group had no history of hypertension (70%) and all of the post abdominal surgery patients in bottle drain group had co-morbidity of hypertension (100%), most of the patients in the molidrain group had no history of diabêtes mellitus (76.3%) but, majority of the patients in bottle drain group had history of diabetes mellitus (90%), none of them had renal disorders in both the groups, most of them in moildrain group and majority of them in bottle drain group had cancer (96.7% and 60%) respectively. Majority of them were maintained with head end elevation of $\leq 30^{\circ}$(60%) in both the groups, and majority of them had history of previous surgery (96.7% and 93.3%) in both the groups. Most of them in moildrain group and all of the post abdominal surgery patients in bottle drain group were ambulated within 3^{rd} post operative day.

It could be interpreted from the Fiq. 6 that majority of the post abdominal surgery patients had history of previous surgery (96.7% and 93.3%) in both the groups respectively.

Fig. 6 depicts that more than half of them in moildrain group and all of the post abdominal surgery patients in bottle drain group were ambulated within 3^{rd} post operative day (56.7% and 100%) respectively

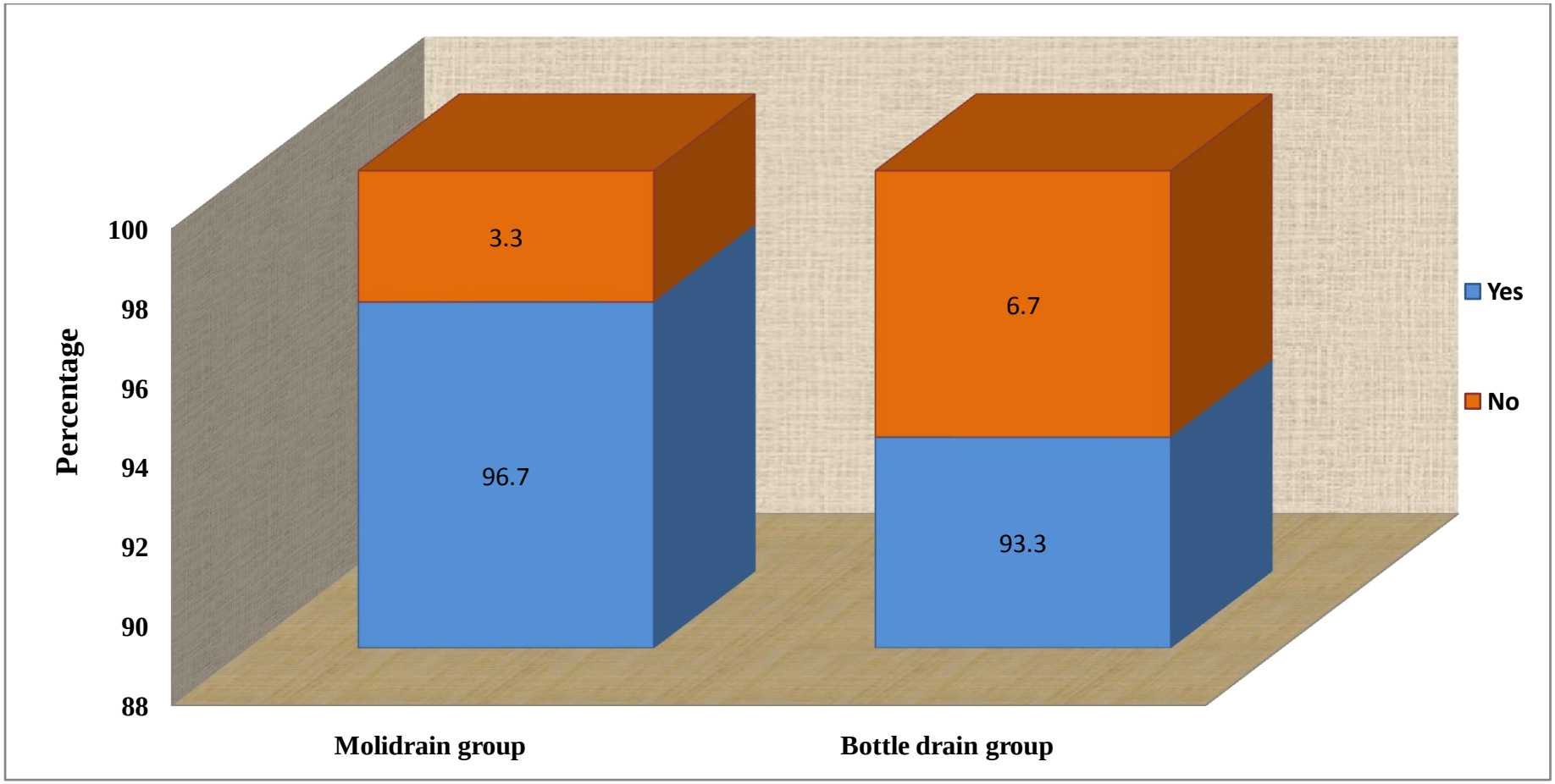


Fig.6. Percentage Distribution of Post Abdominal Surgery Patients Based on History of Previous Surgery

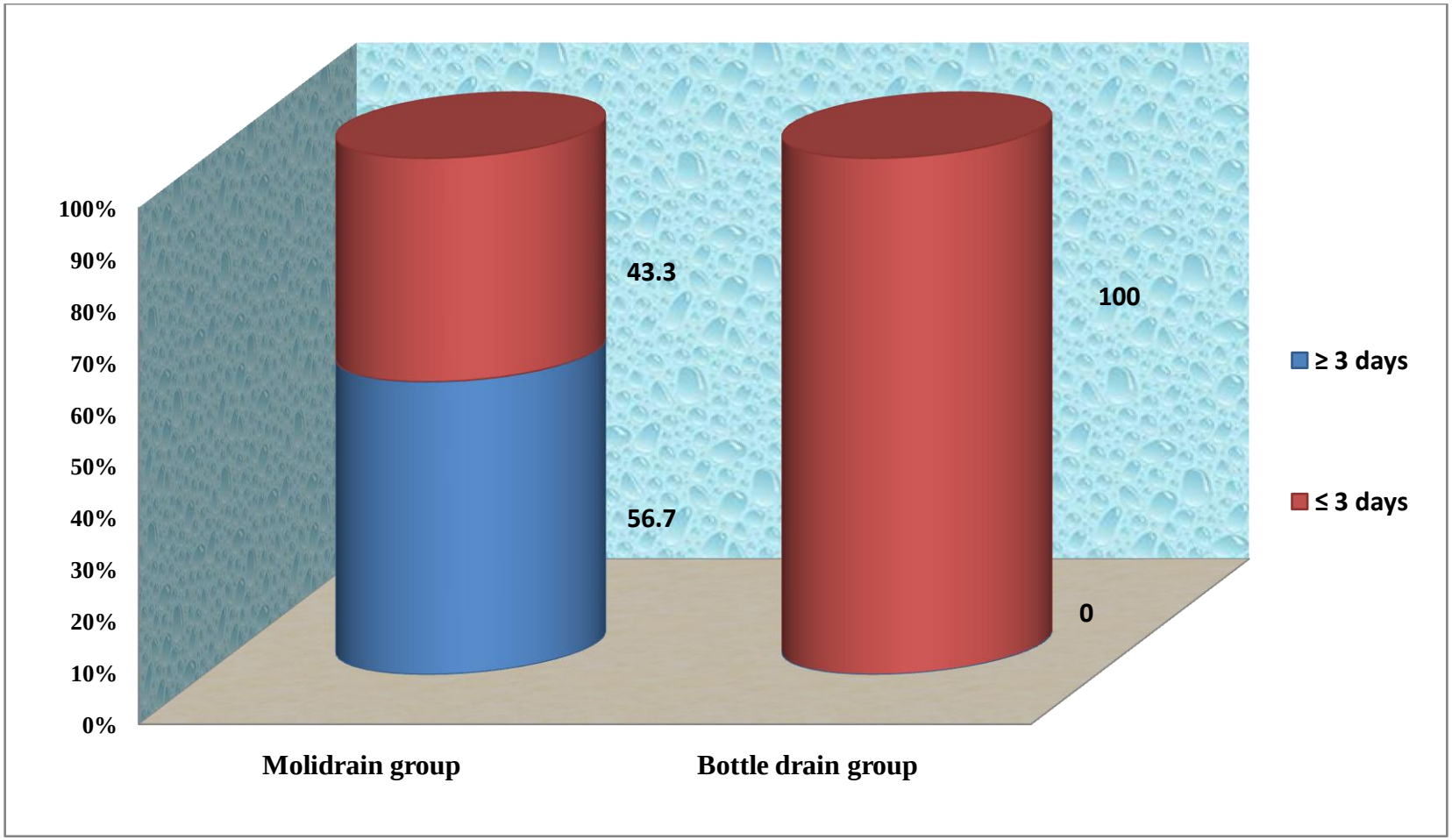


Fig.7. Percentage Distribution of Post Abdominal Surgery Patients Based on Day of Ambulation

Table: 5 Frequency and Percentage Distribution of Level of Nursing Competency of Nasogastric Aspiration among Post Abdominal Surgery Patients in Molidrain Group and Bottle Drain Group

Level of Competency	Non competent (≤15)		Moderately Competent (16 – 22)		Highly Competent (23 – 30)	
	f	%	f	%	f	%
Molidrain bag group (n = 30)	0	0	0	0	30	100
Bottle drain group (n = 30)	20	70	10	30	0	0

The table 5 infers that the most of the nurses demonstrated non competency with bottle drain for nasogastric aspiration (70%) among post abdominal surgery patients where as all the nurses demonstrated high competency with the molidrain bag for the nasogastric aspiration among post abdominal surgery patients (100%).

Table: 6 Comparison of Mean and Standard Deviation of Nursing Competency of Nasogastric Aspiration among Post Abdominal Surgery Patients in Molidrain Group and Bottle Drain Group

Nursing Competency	Mean	S.D	Independent 't' value
Molidrain bag group (n = 30)	41.86	4.33	37.05***
Bottle drain group (n = 30)	10	1.38	

***P≤0.001

The data from the table: 6 shows that there was a statistically significant difference in nursing competency between the molidrain group (M=41.86, SD=4.33) and bottle drain group (M=10, SD=1.38) with t value of 37.05 at P<0.001.Thus the null hypothesis **$H_0$1** stating that "There will be no significant difference in nursing competency of nasogastric aspiration among post abdominal surgery patients between the molidrain bag group and bottle drain group" was rejected.

Table: 7 Comparison of Mean and Standard Deviation of Nursing Competency of Nasogastric Aspiration among Post Abdominal Surgery Patients in Molidrain Group and Bottle Drain Group.

S.No.	Category	Molidrain bag group (n = 30)		Bottle drain group (n = 30)		t value	p value
		M	SD	M	SD	M	SD
1.	Safe handling	14.16	1.205	4.00	0.45	43.208	0.000
2	Prevention of complication	11.13	1.27	2.033	0.71	33.970	0.000
3	Prevention of infection	11.00	1.31	2.633	0.66	31.100	0.000
4	Time and cost control	5.4	0.89	1.60	0.72	18.34	0.000
5	Total	41.86	4.33	10	1.38	37.05	0.000

The above table 7 infers that the there was a significant difference in scores of the following components of nursing competency among the molidrain bag group compared to bottle drain group : safe handling (M=14.16,SD=1.205), prevention of complication (M=11.13,SD=1.27), prevention of infection (M=11,SD=1.31), time and cost control (M=5.4,SD=0.89) between molidrain bag group and bottle drain group, which is significant at p<0.000 level. Thus the null hypothesis **$H_0$1** stating that "There will be no significant difference in nursing competency of nasogastric aspiration among post abdominal surgery patients between the molidrain bag group and bottle drain group" was rejected.

Table: 8 Frequency and Percentage Distribution of Level of Acceptability among the Nurses Regarding Bottle drain and Molidrain Bag

Variable	Molidrain bag group (n = 30)		Bottle drain group (n = 30)	
	f	%	f	%
Highly Unacceptable (0 – 10)	0	0	9	30
Unacceptable (11 – 20)	0	0	21	70
Acceptable (21 – 30)	0	0	0	0
Highly Acceptable (31 – 40)	35	100.0	0	0

The table 6 shows that All of them had high acceptability towards molidrain bag for nasogastric aspiration (100%) while majority of the nurses had unacceptability towards bottle drain (70%). Hence the null hypotheses stating that **Ho4** "There will be no significant difference in level of acceptance of nurses regarding between molidrain bag and bottle drain for naso-gastric aspiration among post abdominal surgery patients" was rejected.

Table: 9 Association between the Level of Nursing Competency of Nasogastric Aspiration and the Demographic Variables of Post Abdominal Surgery Patients in Molidrain Group and Bottle Drain Group.

Demographic Variables	Molidrain Group (n=30)			Bottle drain group (n=30)		
	Up to Mean	Above Mean	χ^2 value	Up to Mean	Above Mean	χ^2 value
Age in years						
≤ 35	-	-		-	-	
36-50	2	13	1.677	3	2	1. 407
≥ 50	5	10	df=1	8	7	df=1
Gender						
Male	3	8	0.151	8	17	1.407
Female	4	15	df=1	3	2	df=1
Smoking						
Yes	2	1	3.49	4	9	0.344
No	5	22	df=1	7	10	df=1
Alcohol						
Yes	1	0	3.39	3	5	0.003
No	6	23	df=1	8	14	df=1
Residence						
Urban	5	18	0.14	1	1	2.00
Semi urban	2	5	df=1	9	18	df=1
Rural	0	0		1	0	

Family						
Single	0	2	0.652	0	0	
Nuclear	3	9	df=1	11	19	NA
Jiont	4	12		0	0	
Occupation						
Private	2	1	6.841	0	0	
Government	3	4	df=1	10	19	1.787 df=1
Self employment	1	13		1	0	
Unemployment	1	5		0	0	

Table: 9 inferred that there was no significant association between the level of nursing competency of nasogastric aspiration and the demographic variables such as age, gender, habit of smoking, alcoholism, residential area, type of family, occupation of post abdominal surgery patients in molidrain group and bottle drain group. Hence the null hypothesis H_O2 stating that "There will be no significant association between the level of nursing competency of nasogastric aspiration and the demographic variables of post abdominal surgery patients in molidrain group and bottle drain group" was retained

Table: 10 Association between the Level of Nursing Competency of Nasogastric Aspiration and the Clinical Variables of Post Abdominal Surgery Patients in Molidrain Group and Bottle Drain Group.

Clinical variables	Molidrain group (n=30)			Bottle drain Group (n=30)		
	Up to Mean	Above Mean	χ^2	Up to Mean	Above Mean	χ^2
BMI(category)						
≤ 18.5	0	0		0	0	
18.5- 25	1	2	0.852	9	19	3.701
25- 30	1	1	df=1	2	0	df=1.26
≥ 30	6	22		0	0	
Hypertension						
Yes	3	6	0.719	11	19	NA
No	4	17	df=1	0	0	
Diabetes Mellitus						
Yes	2	5	0.140	11	16	1.93
No	5	18	df=1	0	3	df=1
COPD						
Yes	0	0	NA	1	0	1.287
No	30	100		10	19	df=1
Renal Disorder						
Yes	0	0	NA	0	0	NA
No	14	16		12	18	

Cancer						
Yes	2	10	0.497	11	18	0.599
No	5	13	df=1	0	1	df=1
Previous Surgery						
Yes	1	0	3.399	10	18	0.164
No	6	23	df=1	1	1	df=1
Ambulation(in days)						
≤ 3	4	13	0.001	9	21	NA
≥ 3	3	10	df=1	-	-	
Elevation of head (in days)						
≤ 2	5	13	0.497	7	11	0.096
≥ 2	2	10	df=1			df=1

Table: 10 shows that there was no significant association between the level of nursing competency of nasogastric aspiration and the selected clinical variables such as body mass index, history of hypertension, diabetes mellitus, COPD, renal disorder, cancer, previous surgery, starting day of the ambulation and head end elevation of the post abdominal surgeries in molidrain bag group and bottle drain group. Hence the null hypothesis **H_O3** stating that "There will be no significant association between the level of nursing competency of nasogastric aspiration and the clinical variables of post abdominal surgery patients in molidrain group and bottle drain group" was retained.

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Summary

This chapter dealt with analysis and interpretation of the data obtained by researcher. The analysis showed that the molidrain bag more effective than the conventional bottle drain for nasogastric aspiration among the post abdominal surgery patients.

CHAPTER – V

DISCUSSION

Statement of the Problem

A True Experimental Study to Assess the Effectiveness of Molidrain Bag Vs Bottle drain upon Nursing Competency of Naso-gastric Aspiration among Post Abdominal Surgery Patients at Selected Hospital in Chennai.

Objectives of the Study

The objectives of the study were

1. To assess the level of nursing competency of nasogastric aspiration among post abdominal surgery patients with molidrain bag and bottle drain.
2. To determine the effectiveness of molidrain bag vs bottle drain for naso gastric aspiration by comparing the nursing competency scores of nasogastric aspiration among post abdominal surgery patients.
3. To assess the level of acceptability among the nurses regarding molidrain bag and bottle drain
4. To determine the association between the level of nursing competency of naso-gastric aspiration and the selected demographic variables of post abdominal surgery patients in molidrain bag group and bottle drain group.
5. To determine the association between the level of nursing competency of naso-gastric aspiration and the selected clinical variables variables of post abdominal surgery patients in molidrain bag group and bottle drain group.

The conceptual framework for this study is based on Modified Ottawa Model**.** A true experimental study design was used. The study included 60 patients selected by probability systematic random sampling technique. The present study was conducted in Apollo speciality hospital, Teynampet, Chennai. The Variables of the study were the molidrain bag Vs bottle drain (dependent variables) and the nursing competency for nasogastric aspiration among post abdominal surgery patients (independent variable).

An extensive review of literature and guidance by experts laid foundation to the development of demographic variable proforma of post abdominal surgery patients, clinical variable proforma of post abdominal surgery patients and structured rating scale to assess the nursing competency. The data collection tools were validated and reliability was established. After two weeks of pilot study, then data collection for main study was conducted. After obtaining ethical committee clearance and setting permission 60 samples were selected by systematic random technique i.e. 30 in bottle drain group and 30 in molidrain group. All the odd numbered samples were included in the bottle drain group and even numbered samples in the molidrain group. A molidrain was designed by the investigator and the design was approved by the experts.

After individual participant consent the data regarding demographic variables and clinical variables of the post abdominal surgery patients were collected. Then the level of nursing competency on using molidrain bag and bottle drain for nasogastric aspiration was assessed by structured rating scale. The data obtained was analysed using descriptive and inferential statistics.

The discussion is presented under the following headings

- Description of demographic variables of post abdominal surgery patients with molidrain bag and bottle drain for nasogastric aspiration.
- Description of clinical variables of post abdominal surgery patients with molidrain bag and bottle drain for nasogastric aspiration.
- Frequency and percentage distribution of level of nursing competency for nasogastric aspiration among post abdominal surgery patients with molidrain bag and bottle drain.
- Comparision of nursing competency for nasogastric aspiration between molidrain bag vs bottle drain among post abdominal surgery patients.
- Frequency and percentage distribution of level of acceptability among the nurses regarding molidrain bag and bottle drain.
- Association between the level of nursing competency of nasogastric aspiration and the selected demographic variables of post abdominal surgeries in molidrain bag group and bottle drain group.
- Association between the level of nursing competency of nasogastric aspiration and the selected clinical variables of post abdominal surgeries in molidrain bag group and bottle drain group.

Description of demographic variables of post abdominal surgery patients with bottle drain and molidrain bag for nasogastric aspiration.

The results of the study reveals that majority of the post abdominal surgery patients in molidrain group and majority of the post abdominal surgery patients in bottle drain group were belonging to the age group of >50 years (50% and 83.3%) respectively. Majority of them in molidrain group were female (63.3%), while most of them in bottle drain were male (83.3%), more than half of them in molidrain group

were from joint family (53.3%) but all of them in bottle drain group were belonging to nuclear family (100), most of them in molidrain group and more than half of them in bottle drain group were non smokers (90% and 56.7%), most of them in molidrain group and majority of them in bottle drain group were non alcoholics (96.7% and 73.3%) less than half of them in molidrain group were self employed (46.7%), while most of them were working in government sector in bottle drain group (96.7), majority of them in molidrain group were from urban area (76.7%) and most of them in bottle drain group were residing in semi urban area (90%) respectively.

The results of the projects that risk of abdominal surgery increases with the age and the incidence rate was found to be equal among both male and female. The smoking and alcoholism were projected as risk factors for abdominal surgery in the study. The busy stressful life style modification and dietary habit could be the contributing factor to the increased incidence of abdominal surgery among the urban and semi urban residents.

This study results were consistent with a study conducted by Nunoo et al in 2009 to assess the prevalence rate intra abdominal surgeries in which he reported that the adjusted intra-abdominal surgical rate was 43.8% in those over the age of 60.intra-abdominal surgical rate over the age of 60 was used as an estimate of the lifetime risk of intra-abdominal surgery.

Description of clinical variables of post abdominal surgery patients with bottle drain and molidrain bag for nasogastric aspiration.

Majority of the post abdominal surgery patients had BMI of 18.5 – 25 in both molidrain group and bottle drain group (93.3%). Majority of patients in molidrain group had no history of hypertension (70%) and all of the post abdominal surgery

patients in bottle drain group had co- morbidity of hypertension (100%), most of the patients in the molidrain group had no history of diabêtes mellitus (76.3%) but, majority of the patients in bottle drain group had history of diabetes mellitus (90%), none of them had renal disorders in both the groups, most of them in moildrain group and majority of them in bottle drain group had cancer (96.7% and 60%) respectively. Majority of them were maintained with head end elevation of ≤ 30˚(60%) in both the groups, and majority of them had history of previous surgery (96.7% and 93.3%) in both the groups. More than half of them in moildrain group and all of the post abdominal surgery patients in bottle drain group were ambulated within 3rd post operative day.

It is evident from the study results that the risk of abdominal surgeries increases with the increase in BMI. The presence of co morbidities such as hypertension , diabetes mellitus, renal disorders and COPD does not contribute to the risk of increased incidence abdominal surgeries. Since the study was conducted in hospital of cancer and neuro speciality most of the patients who underwent had the cancer. After surgery most of the patients were maintained in head end elevated position of atleast 30˚ to prevention of aspiration and the ambulation was started on the 2nd post operative day.

The results were in contradiction with the results of the study conducted by Benjamin et al (2014). He concluded that the incidence of IHR decreased as BMI increased. Obese and morbidly obese patients had a lower incidence of IHR than those who were normal weight or overweight. The causal mechanisms leading to such a relationship are unclear and warrant further study.

The first objective of the Study was to assess the level of nursing competency of nasogastric aspiration among post abdominal surgery patients with molidrain bag and bottle drain.

Most of the nurses demonstrated non competency with bottle drain for nasogastric aspiration (60%) among post abdominal surgery patients where as all the nurses demonstrated high competency with the molidrain bag for the nasogastric aspiration among post abdominal surgery patients (100%). There was a significant difference in scores regarding safe handling (t = 43.208), prevention of complocation (t = 33.970), prevention of infection (t = 31.100), time and cost control (t = 18.34) between molidrain bag group and bottle drain group, which is significant at $p<0.000$ level.

The results of the study shows that the molidrain was most effective in providing standard care for post abdominal surgery patients with nasogastric aspiration and prevent complications.

The second objective was determine the effectiveness of molidrain bag vs bottle drain for naso gastric aspiration by comparing the nursing competency scores for nasogastric aspiration among post abdominal surgery patients .

The study shows statistically significant difference in nursing competency between the molidrain group (M=41.86, SD=4.33) and bottle drain group (M=10, SD=1.38) with t value of 37.05 at $P<0.001$.Thus the null hypothesis $\mathbf{H_0 1}$ stating that "There will be no significant difference in nursing competency of nasogastric aspiration among post abdominal surgery patients between the molidrain bag group and bottle drain group" was rejected.

The study results purposed that the use of bottle connector for gastric aspiration does not aid in accurate measurement, maintain hygienic environment and prevent contamination. The molidrain bag which was designed as a single piece was made easily available in the market and the transparent material and calibration in the bag aids in accurate measurement of the aspirate. The closed system of the molidrain bag prevents the environmental contamination and hospital acquired infection by preventing the accidental breakage and spillage. The backflow of the contents during ambulation cause aspiration of the gastric contents to the respiratory tract contributing to aspiration pneumonia.

The above results were consistent with the results of the study conducted by **Gomes et al (2014)** through research findings illustrated that the presence of a nasogastric feeding tube is associated with colonization and aspiration of pharyngeal secretions and gastric contents leading to a high incidence of Gram-negative pneumonia in patients on enteral nutrition. Aspiration is one of the most common complications in patients with NG tube. The source of aspiration is due to the accumulation of secretions in the pharynx of reflux gastric contents from the stomach into the pharynx. **T**he use of a nasogastric feeding tube and the administration of food increase gastric pH and lead to colonization of gastric secretions. It has also been suggested that gastric bacteria could migrate upward along the tube and colonize the pharynx.

The third objective of the study was to assess the level of acceptability among the nurses regarding molidrain bag and bottle drain

Majority of the nurses had high acceptability towards molidrain bag for nasogastric aspiration (100%) while majority of the nurses had unacceptability

towards bottle drain (70%). Hence the null hypotheses stating that **Ho4** "There will be no significant difference in level of acceptance of nurses regarding between molidrain bag and bottle drain for naso-gastric aspiration among post abdominal surgery patients" was rejected.

The molidrain bag was found to be most appropriate for maintaining nursing care standards in nasogastric aspiration and gained the high acceptance among the nurses due to its easily accessibility and availability as a single piece rather than bottle connector which was time consuming in arranging the articles needed to start a nasogastric suction.

The fourth objective of the study was to find the association between the selected demographic variables of post abdominal surgeries and the level of nursing competency of nasogastric aspiration with molidrain bag and bottle drain

It repeals that there was no significant association between the level of nursing competency of nasogastric aspiration and the demographic variables such as age, gender, habit of smoking, alcoholism, residential area, type of family, occupation of post abdominal surgery patients in molidrain group and bottle drain group. Hence the null hypothesis **H_O2** stating that "There will be no significant association between the level of nursing competency of nasogastric aspiration and the demographic variables of post abdominal surgery patients in molidrain group and bottle drain group" was retained.

The fifth objective of the study was to find the association between the selected clinical variables of post abdominal surgeries and the level of nursing competency for nasogastric aspiration with bottle drain and molidrain bag.

The study predicts that there is no significant association between the level of nursing competency of nasogastric aspiration and the selected clinical variables such as body mass index, history of hypertension, diabetes mellitus, COPD, renal disorder, cancer, previous surgery, starting day of the ambulation and head end elevation of the post abdominal surgeries in molidrain bag group and bottle drain group. Hence the null hypothesis **H_O3** stating that "There will be no significant association between the level of nursing competency of nasogastric aspiration and the clinical variables of post abdominal surgery patients in molidrain group and bottle drain group" was retained.

Hence the it is evident from the above results that the molidrain bag is effective in providing high competency care for all the post abdominal surgery patients with nasogastric suctioning, irrespective of their demographic and clinical variables.

Summary

This chapter has dealt with the discussion of the findings in the present study which includes demographic variables, clinical variables, the effectiveness of molidrain bag vs bottle drain upon nursing competency of nasogastric aspirations among post abdominal surgery patients, level of acceptability regarding molidrain bag among the nurses., association between the demographic and clinical variables and level of nursing competency for nasogastric aspirations among post abdominal surgery patients with molidrain bag and bottle drain.

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATION AND RECOMMENDATION

This is the most creative and demanding part of the study .This chapter gives a brief account of the present study including the conclusion drawn from the finding, recommendations, limitations of the study, suggestions for the study and nursing implications.

Summary

The present study was intended to analyse the effectiveness of Molidrain Bag Vs Bottle drain upon Nursing Competency of Naso-gastric Aspiration among Post Abdominal Surgery Patients at Apollo speciality hospital in Chennai.

The Objectives of the Study

1. To assess the level of nursing competency of nasogastric aspiration among post abdominal surgery patients with molidrain bag and bottle drain.
2. To determine the effectiveness of molidrain bag vs bottle drain for nasogastric aspiration by comparing the nursing competency scores of nasogastric aspiration among post abdominal surgery patients.
3. To assess the level of acceptability among the nurses regarding molidrain bag and bottle drain for nasogastric aspiration among post abdominal surgery patients.
4. To determine the association between the level of nursing competency of naso-gastric aspiration and the selected demographic variables of post abdominal surgery patients in molidrain bag group and bottle drain group.

5. To determine the association between the level of nursing competency of naso-gastric aspiration and the selected clinical variables variables of post abdominal surgery patients in molidrain bag group and bottle drain group.

Null Hypothesis

Ho1: There will be no significant difference in nursing competency of nasogastric aspiration among post abdominal surgery patients between molidrain bag group and bottle drain group.

Ho2: There will be no significant association between the level of nursing competency of nasogastric aspiration and the demographic variables of post abdominal surgery patients in molidrain group and bottle drain group.

Ho3. There will be no significant association between the level of nursing competency of nasogastric aspiration and the clinical variables of post abdominal surgery patients in molidrain group and bottle drain group.

Ho4. There will be no significant difference in level of acceptance of nurses regarding between molidrain bag and bottle drain for nasogastric aspiration among post abdominal surgery patients.

The conceptual framework for the study was developed on the basis of King's Goal Attainment Model, which was modified for the present study .An intensive review of literature and experts guidance laid the foundation to the development of tools such as demographic variable proforma, clinical variable proforma, and nurses competency rating scale.

In this study, true experimental research design was adopted .The present study was conducted at Apollo speciality hospital, Chennai among post abdominal surgery patients with continuous Ryle's tube aspiration. The sample size for the

present study was 60 clients with post abdominal surgeries, among which, 30 clients were assigned to molidrain group and 30 clients to control group who satisfied the inclusion criteria.

The investigator used the demographic and clinical variable proforma of clients to obtain the baseline data. Standardised Numerical rating scale were used to assess the level of effectiveness of molidrain bag and bottle drain up on nursing competency among post abdominal surgery patients.

The data collection tools were validated and reliability was established. After the pilot study, the data collection of main study was conducted for the period of 4 weeks. The collected information was tabulated and analysed by using appropriate descriptive and inferential statistics.

Major Findings of the Study

- Half of the post abdominal surgery patients in molidrain group and majority of the post abdominal surgery patients in bottle drain group were belonging to the age group of >50 years (50% and 83.3%) respectively. Majority of them in molidrain group were female (63.3%), while most of them in bottle drain were male (83.3%), more than half of them in molidrain group were from joint family (53.3%) but all of them in bottle drain group were belonging to nuclear family (100), most of them in molidrain group and more than half of them in bottle drain group were non smokers (90% and 56.7%), most of them in molidrain group and majority of them in bottle drain group were non alcoholics (96.7% and 73.3%) less than half of them in molidrain group were self employed (46.7%), while most of them were working in government sector in bottle drain group (96.7), majority of them in molidrain group were

from urban area (76.7%) and most of them in bottle drain group were residing in semi urban area (90%) respectively.

- Most of the post abdominal surgery patients had BMI of 18.5 – 25 in both molidrain group and bottle drain group (93.3%). Majority of patients in molidrain group had no history of hypertension (70%) and all of the post abdominal surgery patients in bottle drain group had co- morbidity of hypertension (100%), most of the patients in the molidrain group had no history of diabetes mellitus (76.3%) but, majority of the patients in bottle drain group had history of diabetes mellitus (90%), none of them had renal disorders in both the groups, most of them in moildrain group and majority of them in bottle drain group had cancer (96.7% and 60%) respectively. Majority of them were maintained with head end elevation of $\leq 30^{\circ}$(60%) in both the groups, and majority of them had history of previous surgery (96.7% and 93.3%) in both the groups. More than half of them in moildrain group and all of the post abdominal surgery patients in bottle drain group were ambulated within 3rd post operative day (56.7% and 100%) respectively
- Most of the nurses demonstrated non competency with bottle drain for nasogastric aspiration (70%) among post abdominal surgery patients where as all the nurses demonstrated high competency with the molidrain bag for the nasogastric aspiration among post abdominal surgery patients (100%).
- There was a statistically significant difference in nursing competency between the molidrain group (M=41.86, SD=4.33) and bottle drain group (M=10, SD=1.38) with t value of 37.05 at $P < 0.001$. There was a significant difference in scores regarding safe handling (t = 43.208), prevention of complication (t = 33.970), prevention of infection (t = 31.100), time and cost

control (t = 18.34) between molidrain bag group and bottle drain group, which is significant at p<0.000 level. Thus the null hypothesis $_{H0}$**1** stating that "There will be no significant difference in nursing competency of nasogastric aspiration among post abdominal surgery patients between the molidrain bag group and bottle drain group" was rejected**.**

- All of them had high acceptability towards molidrain bag for nasogastric aspiration (100%) while majority of the nurses had unacceptability towards bottle drain (70%). Hence the null hypotheses stating that **Ho4** "There will be no significant difference in level of acceptance of nurses regarding between molidrain bag and bottle drain for naso-gastric aspiration among post abdominal surgery patients" was rejected.
- There was no significant association between the level of nursing competency of nasogastric aspiration and the demographic variables such as age, gender, habit of smoking, alcoholism, residential area, type of family, occupation of post abdominal surgery patients in molidrain group and bottle drain group. Hence the null hypothesis H_O2 stating that "There will be no significant association between the level of nursing competency of nasogastric aspiration and the demographic variables of post abdominal surgery patients in molidrain group and bottle drain group" was retained.
- There was no significant association between the level of nursing competency of nasogastric aspiration and the selected clinical variables such as body mass index, history of hypertension, diabetes mellitus, COPD, renal disorder, cancer, previous surgery, starting day of the ambulation and head end elevation of the post abdominal surgeries in molidrain bag group and bottle drain group. Hence the null hypothesis **H_O3** stating that "There will be no

significant association between the level of nursing competency of nasogastric aspiration and the clinical variables of post abdominal surgery patients in molidrain group and bottle drain group" was retained.

Nursing Implications

Based on the findings researcher recommends the following steps in the field of nursing practice, nursing administration, nursing education, nursing research.

Nursing Practice

The study findings of the literature revealed that the clinical skill is improved by the usage of molidrain bag ,the bag facilitates accurate measurement and easy tubing connection, reduce time consumption, reduce spillage of content thus provide clean environment, easy observation of the drain content.

Nursing education

As the health care advances and newer trends emerge in the field of nursing education, focus should be based on the innovation and implementation of new changes to enhance nursing care. Nursing students should be taught the proper protocol of nasogastric aspiration and measures taken to prevent complications. It helps the students to gain adequate knowledge of continuous nasogastric aspirations and its process. Thus the advantages of molidarin bag should be taught to nursing students to develop their competency level.

Nursing administration

The health work environment requires more competence of the nursing professionals, because it involves technical and scientific knowledge, skills and theoretical foundations to make a decision. The nursing administrators impose the

major role of providing continuing education to nurses on the new innovations and to help them in implementing the same. The nurse administrators should train the nurses on the benefits and cost effectiveness of molidrain bag.

Nursing research

Nurse researcher should create evidence based practice in hospitals for sustaining health care demands. Nursing research has a tremendous influence on current and future professional nursing practice, thus making it an essential component of educational process. Nurse researcher should appraise the challenges in identifying the difficulties and implement the molidrain bag for all post abdominal surgery patients with continuous nasogastric aspirations. The nurse researcher should help the Nurses and the nursing students to conduct a study with large sample size and sustain the practice.

Recommendations

- Present study can be replicated in other hospitals also.
- The student nurses can be trained effectively in handling of the molidrain bag and educate the standards of practice.
- The product can be recommended to other multispecialty hospital and improve the quality of health care services.
- The cost effectiveness of the process can be studied by conducting research with large sample size in future.
- A multi center study may be carried out by applying the same interventions.
- Phenomenology study can be done to find out the barriers for adherence to practice safe method for nasogastric aspirations and find out the factors to overcome the barriers to implement the practice

Limitations

- Study findings cannot be generalized due to small sample size.
- Descriptive study could not be conducted due to practical constraints.
- Difficulty in gathering the nurses for teaching programme and to conduct the study.

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APPENDIX I

Apollo College of Nursing
(A unit of Apollo Hospitals Educational Trust)
(Recognised by the Indian Nursing Council and Affiliated to the Tamil Nadu Dr. M.G.R. Medical University, Chennai)

CO/0212/2018 27.11.2017

To

Dr. Pratibha Dabas
Director Medical Services
Apollo Specialty Hospital
Teynampet,
Chennai, Tamil Nadu-600035

Respected Madam,

Sub:-To request permission for Research study

Greetings! As a part of the curriculum requirement of our M.Sc (N) II year student Ms.K.Chandra has selected the following title for her research study.

"A study to assess the effectiveness of Molidrain Bag Versus Bottle drain upon Nursing competency of Naso Gastric Aspiration among Post Abdominal Surgery Patients at selected Hospitals, Chennai."

So I kindly request your goodselves to permit her to conduct study in your esteemed hospital.

Thanking You,

Dr. LATHA VENKATESAN
PRINCIPAL

Dr. PRATIBHA DABAS
Director - Medical Services
Apollo Speciality Hospitals
Chennai - 600 035.

Regd. Office : 21, Greams Lane Off, Greams Road, Chennai - 600 006. Ph : +91-44-2829 3333, 2829 0200 Website : www.apollohospitalseducation.com
Unit Office : Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai - 600 095. Phone : 044 - 2653 4387 Fax : 044 - 2653 4923 / 2653 4386

APPENDIX II

INSTITUTIONAL ETHICS COMMITTEE
Apollo College of Nursing, Apollo Hospitals, Chennai
Reg. No.: ECR / 1002 / Inst / TN2017

4th April 2018

To

Ms. K. CHANDRA
"C" Block, No.55, Railway Police Quarters,
Gengu Reddy Street, Egmore,
Chennai – 600 008.

Dear Chandra,

Ref.: Your Research Topic: "AN EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF MOLIDRAIN BAG Vs BOTTLE DRAIN UPON NURSING COMPETENCY OF NASOGASTRIC ASPIRATION AMONG POST ABDOMINAL SURGERY PATIENTS AT SELECTED HOSPITAL IN CHENNAI"

The Institutional Ethics Committee has received the above said research proposal document submitted by you related to the conduct of the above referenced study.

The Institutional Ethics Committee, Apollo College of Nursing, Apollo Hospitals, Chennai reviewed and discussed the research proposal submitted by you during the IEC meeting held on 2nd April 2018.

The following Institutional Ethics Committee members were present at the meeting held on 2nd April 2018 at 3.00pm at our Senate Hall, Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai – 600 095.

...2

Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai – 600 095, Tamilnadu, India.
Tel.: + 91 – 44 – 265 34 387, Fax : +91 – 44 – 265 34 923, Email : apollocollegeofnursing@gmail.com

NAME	SEX	DESIGNATION	AFFILIATION	POSITION IN THE COMMITTEE
Dr. Janani Sankar	F	Senior Consultant	Kanchi Kamakoti Child Trust Hospital, Chennai	Chair Person
Dr. Latha Venkatesan	F	Principal	Apollo College of Nursing, Chennai	Member Secretary
Dr. K. Raman	M	Associate Professor	Saveetha Medical College, Chennai	Clinician
Dr. Nirumal Rakkesh	M	Clinical Pharmacologist	Apollo Hospitals, Chennai	Basic Medical Scientist
Mr. Kirubanandam .S.N	M	Advocate	High Court, Chennai	Legal Expert
Dr. Shuba Kumar	M	Director	Samarth, NGO	Social Scientist
Dr. Ganesh N.R	M	Incharge Emerg. Medicine	Apollo Specialty Hospital, Chennai	Scientific Member
Dr. Vijayalakshmi .K	F	Professor	Apollo College of Nursing, Chennai	Scientific Member
Mrs. Krupa .M	F	Consultant Speech Therapist	Vasantham School & home for Special Needs	Scientific Member
Dr. Balasubramanian .NK	M	Statistician	Apollo College of Nursing, Chennai	Member
Mr. Mayilvahanan	M	Principal	UCCK School, Chennai	Lay Person
Mr. Jeba Singh .S	M	Pastor & Theologist	Vision Assembly, Chennai	Theologian

The Institutional Ethics Committee reviewed the proposal, its methodology and design of the study, The proposed thesis work can be started in the presented form without any modifications.

The Institutional Ethics Committee review and approval of the report is only to meet the academic requirement and will not amount to any approval of the conclusions/recommendations as conclusive, deserving adoption and implementation, in any form, in any health care institution. This is subjected to the conditions noted there on and such other conditions as may be prescribed.

The Institutional Ethics Committee studies is constituted and works as per ICH-GCP, ICMR and revised Schedule Y guidelines.

With Regards,

Dr. LATHA VENKATESAN
Member Secretary

Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai – 600 095, Tamilnadu, India.
Tel.: + 91 – 44 – 265 34 387, Fax : +91 – 44 – 265 34 923, Email : apollocollegeofnursing@gmail.com

APPENDIX III

REQUEST FOR CONTENT VALIDITY
LETTER REQUESTING OPINIONS AND SUGGESTIONS OF EXPERTS FOR ESTABLISHING CONTENT VALIDITY OF RESEARCH

From
Ms. K.Chandra
M.Sc., (Nursing) II Year,
Apollo College of Nursing,
Chennai-95.

To
Forwarded through:
Dr. Latha Venkatesan,
Principal,
Apollo College of Nursing.
Chennai-95

Respected Sir / Madam,

I am a post graduate student of the Apollo College of Nursing, Chennai, I have Selected the following topic for my research project, to be submitted to The Tamilnadu Dr. M.G.R.Medical University, Chennai, in partial fulfilment of university requirement for award of M.Sc Nursing.

'An Experimental Study to Assess the Effectiveness of Molidrain Bag Vs Bottle drain upon Nursing Competency of Naso-gastric Aspiration among Post Abdominal Surgery Patients at Selected Hospital in Chennai".

I will be privileged to have your valuable suggestions with regards to the establishment of content validity of the tool. I kindly request you to validate my research tool and give suggestions about the same. I would be highly obliged and remain thankful for your great help for validating my tool.

Thanking You.

Place: Yours sincerely
Date: K.Chandra

APPENDIX IV
LIST OF EXPERTS FOR CONTENT VALIDITY

1. Dr. Latha Venkatesan, M.Sc (N)., M.Phil (N)., Ph.D (N).,

Principal and Professor,

Apollo college of Nursing,Chennai-95.

2. Dr. A. Lizy Sonia, M.Sc(N)., Ph.D., (N)

Vice Principle and head of medical surgical nursing department,

Apollo college of Nursing,Chennai-95.

3. Dr.Venkat ,MS MCH

Consultant Surgical Oncologist

Apollo main Hospital, Chennai-600005

4. Prof. Jaslina Gnuarani M.Sc. (N), Ph.D(N).,

Medical surgical Nursing,

Apollo College of Nursing, Chennai-95.

5. Prof. K. Vijayalakshmi, M.Sc (N)., M.A. Psychology, Ph.D(N)

Head of Department, Mental Health Nursing,

Apollo College of Nursing, Chennai-95.

6. Ms. D..Sasikala., M.Sc. (N),

Medical surgical Nursing,

Apollo College of Nursing, Chennai-95.

7. Mrs.Kanchana., M.Sc. (N),

Associated professor, Medical surgical Nursing

Apollo College of Nursing, Chennai-95.

APPENDIX V

RESEARCH PARTICIPANT CONSENT FORM

Dear Participant,

I am Chandra.k M.Sc. Nursing II year student of Apollo College of Nursing, Chennai. As a part of my study, I have selected a Research Project on "**Effectiveness of Molidrain Bag Vs Bottle drain upon Nursing Competency of Nasogastric Aspiration among Post Abdominal Surgery Patients at Selected Hospital in Chennai"**. I hereby seek your consent and co-operation to participate in the study. Please be frank and honest in your response. The information collected will be kept confidential and anonymity will be maintained.

Signature of the Researcher

APPENDIX VI

CERTIFICATE FOR ENGLISH EDITING

This is to certify that the dissertation "**An Experimental study to assess the Effectiveness of Molidrain Bag Vs Bottle drain Upon Nursing Competency of Naso Gastric Aspiration among Post Abdominal Surgery Patients at Selected Hospital in Chennai,"**by Ms.K.Chandra M.sc nursing IInd year student ,Apollo college of nursing ,Chennai was edited for English language appropriateness.

Signature 13.08.2018

v. Principal
Sivakasi Hindu Nadar Mat. Hr. Sec. School
New No.2/3, Old No.46/47,
Aravamudhu Garden Street.
Egmore, Chennai - 600 008.

APPENDIX VII

Plagiarism Detector – Originality Report

Plagiarism Detector project: [http:// plagiarism-detector.com] Application core version : 622

Originality Report Details

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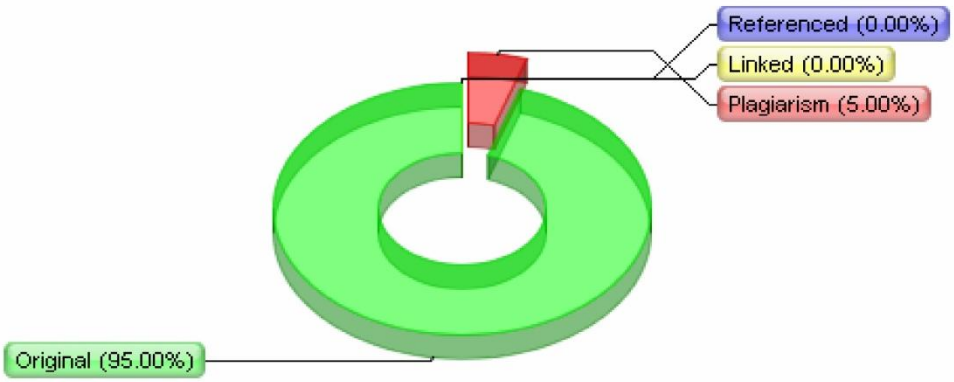
Plagiarism Detection Chart



Referenced - 0% / Linked - 0%

Original – 95% / Plagiarism - 5%

APPENDIX VIII

DEMOGRAPHIC VARIABLE PROFORMA

Purpose:

This profile is used to measure the demographic variables of post abdominal surgery Such as age, gender, smoking, alcohol, residence, family and occupation.

Instructions:

Read the following items carefully and select one correct response by placing appropriate tick mark on the space provided. Please be frank in answering. It will be kept confidential and anonymity will be maintained.

1. Age in years

a)≤ 35 ☐

b)36-50 ☐

c)≥ 50 ☐

2. Gender

a)Male ☐

b)Female ☐

3.Smoking

a)Yes ☐

b)No ☐

4.Alcohol

a)Yes ☐

b)No ☐

5.Residence

a)Urban ☐

b)Semi urban ☐

c)Rural ☐

6.Family

a)Single ☐

b)Nuclear ☐

c)Joint ☐

7.Occupation

a)Private ☐

b)Government ☐

c)Self employment ☐

d)Unemployment ☐

APPENDIX IX

CLINICAL VARIABLE PROFORMA

Purpose:

This proforma is used by the researcher to collect the information on clinical variables such as body mass index, hypertension, diabetes, COPD, renal disease, cancer, previous surgery and ambulation.

1. BMI (category)

a) ≤ 18.5 ☐

b) 18.5-25 ☐

c) 25-30 ☐

d) ≥ 30 ☐

2. Hypertension

a) Yes ☐

b) No ☐

3. Diabetes

a) Yes ☐

b) No ☐

4.COPD

a) Yes ☐

b) No ☐

5.Renal

a) Yes ☐

b) No ☐

6.Cancer

a) Yes ☐

b) No ☐

7.Previous Surgery

a) Yes ☐

b) No ☐

8.Ambulation

a) ≤ 3 ☐

b) ≥ 3 ☐

9.Elevation

a) ≤ 2 ☐

b) ≥ 2 ☐

APPENDIX X

BLUE PRINT FOR OBSERVATION CHECK LIST TO ASSESS THE EFFECTIVENESS OF MOLIDRAIN BAG VS BOTTLE DRAIN UP ON NURSING COMPETENCY OF NASOGASTRIC ASPIRATION AMONG POST ABDOMINAL SURGERY PATIENTS

S.NO	CONTENT	ITEMS	TOTAL	PERCENTAGE
1	Safe handling	1,2,4,7,15	5	33
2	Prevention of complications	3,6,9,12	4	27
3	Prevention of infections	5,8,13,14,	4	27
4	Time and cost control	10,11,	2	13
	TOTAL		15	100%

APPENDIX XI

Observation Check List to Assess the Nursing Competency on Use of Molidrain Bag Vs Bottle Drain

Purpose: This check list is designed to assess the level of acceptability upon nursing competency of nasogastric aspiration with molidrain bag group and bottle drain group among post abdominal surgery patients.

Instruction: There are 15 items below. Kindly read the items. Response extends from strongly agree, agree to strongly disagree. Put a tick mark against your answers. Describe your responses freely and frankly. The responses will be kept confidential and used for research purpose only.

Sl. No	Key aspects	Strongly agree(3)	Agree(2)	Disagree(1)	Strongly disagree(0)
1	Safe and comfortable in handling the drain				
2	Easy for mobilization				
3	Prevents the backflow of the aspiration content.				
4	Easy tubing connections				
5	Prevention of spillage of aspiration content				
6.	Accurate calibration of drain				
7	Easy to measure the drainage with accurate calibration.				
8	Easy observation of the aspiration content (colour, consistency)				
9	Facilitate continuous drainage				

10	Reduced time consumption				
11	Cost effective.				
12	Prevention of bad odour due to spillage of aspiration content.				
13	Ease and safe disposal of content				
14	Maintenance of Closed system of practice				
15	Satisfaction of Health care workers				
	TOTAL				

Scoring Key

Strongly agree -3 Agree-2 Disagree-1 Strongly disagree-0.

Scoring interpretation

Score	Percentage	Category
< 15	< 50%	Poor standard of practice
15-30	51-75%	Good standard of practice
31-45	76-100%	Best standard of practice

APPENDIX XII

BLUE PRINT FOR RATING SCALE ON ACCEPTABILITY REGARDING MOLIDRAIN BAG FOR NASO GASTRIC ASPIRATION UP ON NURSING COMPETENCY AMONG POST ABDOMINAL SURGERY PATIENTS

S.NO	CONTENT	ITEMS	TOTAL	PERCENTAGE (%)
1	Characteristics of researcher	1,2.3	3	30
2	Methods of administration	4,5,6	3	30
3.	Effectiveness of Drain bag	7,8,9,10	4	40
	TOTAL		10	100%

RATING SCALE ON LEVEL OF ACCEPTABILITY OF MOLIDRAIN BAG UPON NURSING COMPENTENCY AMONG POST ABDOMINAL SURGERY PATIENTS

Purpose

This rating scale is designed to assess the level of acceptability of molidrain group upon nursing competency of nasogastric aspirations among post abdominal surgery patients.

Instruction:

There are 10 items below. Kindly read the items. Response extends from highly acceptable, acceptable to highly unacceptable. Put a tick mark against your answers. Describe your responses freely and frankly. The responses will be kept confidential and used for research purpose only.

S.NO.	ITEMS	Highly Acceptable	Acceptable	Unacceptable	Highly Unacceptable
1	Approach of the researcher				
2	Easily available in the market				
3	Gaining skill while handling the procedure				
4	Prevents breakage of the container				
5	Viability for long time usage				

6	I like to do it regularly				
7	Comfort in collecting the aspiration				
8	Easy to access				
9	The researcher explained clearly about the intervention				
10	Use of appropriate method for aspiration				

Scoring key

Highly acceptable - 4 Acceptable - 3 unacceptable - 2 highly unacceptable - 1. The total score is converted into percentage and graded as given below.

Scoring Interpretation

S.No	**Scoring**	**Interpretation**
1.	Highly acceptable	76-100%
2.	Acceptable	51-75%
3.	Unacceptable	26-50%
4.	Highly unacceptable	<25%

APPENDIX XIII

DEMOGRAPHIC PROFILE PROFORMA

1. Age in years

a) ≤ 35

b) 36-50

c) ≥ 50

2. Gender

a) Male

b) Female

3.Smoking

a) Yes

b) No

4.Alcohol

a) Yes

b) No

5.Residence

a) Urban

b) Semi urban

c) Rural

6.Family

a) Single

b) Nuclear

c) Joint

7.Occupation

a) Private

b) Government

c) Self employment

d) Unemployment

APPENDIX XIV

CLINICAL VARIABLE PROFORMA

1. BMI (category)

a) ≤ 18.5

b) 18.5-25

c) 25-30

d) ≥ 30

2. Hypertension

a) Yes

b) No

3. Diabetes

a) Yes

b) No

4.COPD

a) Yes

b) No

5.Renal

a) Yes

b) No

6.Cancer

a) Yes

b) No

7.Previous Surgery

a) Yes

b) No

8.Ambulation

a) ≤ 3

b) ≥ 3

9.Elevation

a) ≤ 2

b) ≥ 2

APPENDIX - XV
MASTER CODING SHEET

	Bottle drain group																																		
S.No	**Demographic varianble**								**clinical variable**											**Observation checklist to Assess the Nursing Competencies on use of Bottle drain Vs Molidrain bag**																
	age in yrs	**age cat**	**sex**	**smoking**	**alcohol**	**residence**	**family**	**occupation**	**ht**	**wt**	**bmi**	**HT**	**DM**	**COPD**	**Renal**	**cancer**	**pre sur**	**day of ambula**	**eoh**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**total**
1	54	3	1	2	2	1	2	2	157	52	22	1	2	2	2	1	2	2	1	0	1	0	1	0	1	1	0	1	1	1	1	1	1	1	11
2	48	2	1	1	2	2	2	2	164	54	20	1	2	2	2	1	1	2	1	0	1	0	1	0	1	1	0	1	1	1	1	1	1	1	11
3	55	3	1	1	1	3	2	2	159	52	21	1	1	2	2	1	1	2	1	0	1	0	1	0	1	1	0	1	1	0	0	0	1	1	8
4	54	3	1	1	1	2	2	2	164	57	21	1	1	2	2	1	1	2	1	0	1	0	1	0	1	1	0	1	1	1	1	1	1	1	11
5	48	2	1	2	2	2	2	3	159	62	25	1	1	2	2	1	1	2	1	0	1	0	1	0	1	1	0	1	1	0	1	1	0	1	9
6	47	2	2	2	2	1	2	2	155	60	25	1	1	2	2	1	1	2	1	0	1	0	0	0	1	1	0	1	1	1	1	1	1	1	10
7	52	3	1	2	2	2	2	2	157	59	24	1	1	2	2	1	1	2	1	0	1	0	1	0	1	1	0	1	1	1	1	1	1	1	11
8	51	3	1	1	1	2	2	2	162	58	22	1	1	2	2	1	1	2	1	1	1	0	1	0	1	1	0	1	1	1	1	1	1	1	11
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12	62	3	1	2	2	2	2	2	159	52	21	1	1	2	2	1	1	2	2	0	1	0	1	0	1	1	0	1	0	0	0	1	0	1	7
13	54	3	1	2	2	2	2	2	155	54	22	1	1	2	2	1	1	2	2	0	1	0	1	0	1	1	0	1	1	1	1	1	1	1	11
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15	62	3	1	2	2	2	2	2	158	55	22	1	1	2	2	1	1	2	2	0	1	0	1	0	1	1	0	1	1	1	1	1	1	1	11
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Molidrain bag group																																										
s.no	Demographic varianble								clinical variable														Obervation Checklist to Assess the Nursing Competencies on use of Molidrain Bag Vs Bottle drain																		
	agein yrs	age cat	sex	smoking	alcohol	residence	family	occupation	ht	wt	bmi	bmi cat	HT	DM	COPD	Renal	cancer	pre sur	day of ambulation	eoh	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	total						
1	58	3	2	2	2	1	3	1	159	60	24	2	1	2	2	2	1	1	1	1	3	2	3	3	3	2	2	3	2	2	2	2	3	2	2	36						
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6	44	2	1	2	2	1	2	2	165	50	18	1	2	2	2	2	2	2	1	1	3	3	3	3	2	2	2	2	2	2	2	2	3	3	3	37						
7	55	3	1	2	2	1	2	2	173	69	23	2	2	2	2	2	2	2	1	1	3	3	3	2	3	3	2	2	3	3	3	3	3	2	2	40						
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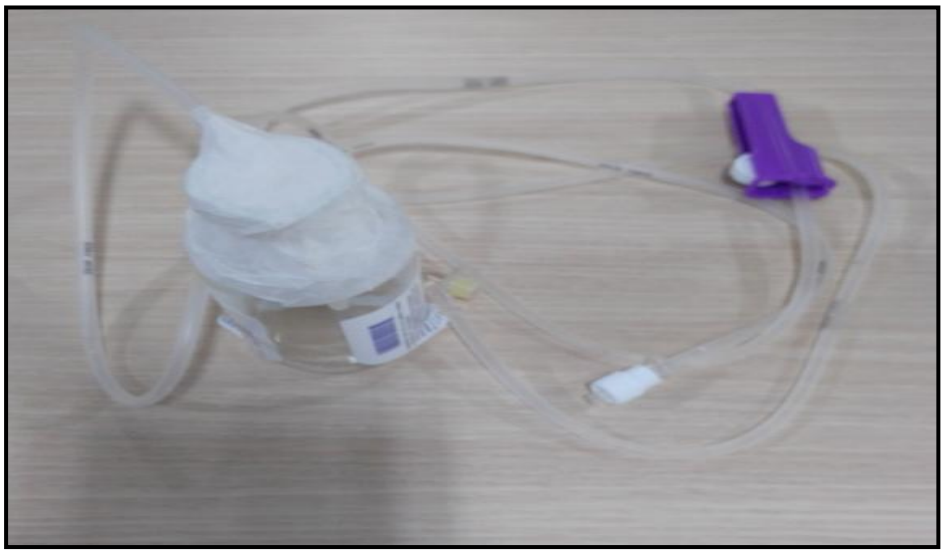
APPENDIX XVI

BOTTLE DRAIN



MOLIDRAIN BAG